PERIODICAL READING ROOM
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SCHOOL LIFE

Official Journal of the . . .

OFFICE OF EDUCATION

Science in the Elementary School
PAUL E. BLACKWOOD

Quality Secondary Schools of the Future
OVID F. PARODY

NOVEMBER 1964

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FEDERAL PROGRAMS AND ACTIVITIES

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ETV grants now total 42

The number of Federal grants to educational agencies under the Educational Television Facilities Act of 1962 has now reached 42; the number of applications pending approval, 36. These eight institutions have received grants since *School Life* last reported on this program:

Educational Television Association of Metropolitan Cleveland, channel 25, to reach about 5 million viewers, including 773,000 students at 350 institutions ($250,000).

Greater New Orleans Educational Television Foundation, channel 8, to reach about a million viewers, including students at 495 institutions ($186,235).

Mohawk-Hudson Council on Educational Television, Inc., Schenectady, N.Y., channel 17 ($163,626).

Ohio University, channel 20, to reach half a million viewers in Ohio and West Virginia ($100,130).

Spokane School District No. 81, channel 7, to reach 110,000 students in 250 schools in Washington and Idaho ($201,991).

University of Houston, channel 8, to reach about 2,200,000 viewers, including 500,000 students in 660 schools ($294,996).

University of Illinois Board of Trustees, channel 12, to reach about 886,000 viewers, including 251,500 students at 774 educational institutions ($300,000).

Yakima (Wash.) School District No. 7, channel 47 ($79,279).

Applications pending are from the University of Vermont and State Agricultural College (four applications), San Bernardino Valley Joint Union College District, State Board of Control of Florida and Florida Educational Television Commission, Lehigh Valley Educational Television Corporation of Bethlehem, Pa., and Community Television, Inc., of Jacksonville, Fla.

The Educational Television Facilities Act of 1962 authorizes a program of matching grants to educational agencies to acquire and install trans-

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OFFICE OF EDUCATION . . . FRANCIS KEPPEL, *Commissioner*
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SCHOOL LIFE
NOVEMBER 1964
Vol. 47 . . . No. 2

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School Life reports Office planning and action and publishes articles by members of Office staff; presents statistical information of national interest; reports legislation and Federal activities and programs affecting education. Published nine times a year.

Printing approved. Bureau of the Budget, August 23, 1961. Contents not copyrighted.

[In January 1965 *School Life* will be replaced by *American Education*. Price 40 cents (Single Copy). Subscription price, 10 issues a year, Domestic, $3.00 a year; foreign, $4.00. Send check or money order to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.]

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mission apparatus, including towers, microwave equipment, boosters, translators, repeaters, mobile equipment, and video-recording equipment necessary for television broadcasting.

Loans made to Cuban refugee students

About 2,800 Cuban refugees are attending 270 U.S. colleges and universities this fall with the help of loans totaling $1,045,492 made under the Loan Program for Cuban Students. The Office of Education, which administers the program, expects to make another $54,508 available for loans for students at 25 other colleges and universities as soon as requests are processed.

Through the Cuban loan program a Cuban refugee student may borrow up to $500 a semester. He has 10 years to pay it back, beginning 1 year after he completes his education. The interest rate is 3 percent. Loans are made through colleges and universities, but they are repaid directly to the Office of Education.

Since the program began in February 1961 more than 3,000 Cuban students have borrowed nearly $4.5 million.

Philippine textbook project nears goal

The goal of the Textbook Production Project sponsored by the Agency for International Development in the Philippine Islands is in sight. By next summer the school system of the islands should have 25 million textbooks developed and printed with assistance from AID. The project stems from a 1957 study. Lack of books was, the study found, a major reason for the fact that 10 percent of school-age children never began school and 72 percent dropped out at the end of the 6th grade.

The project has helped to establish the basis for a modern publishing facility to produce a steady supply of books. AID is bearing about one-sixth the cost of printing and handling. In addition, it has made a grant of $4.4 million to the Philippines for the importation of paper.

One of the greatest difficulties in producing textbooks is language. Over 90 dialects (belonging to 11 groups) are spoken in the islands. At present instruction in grades 1 and 2 is in the local dialect. Beginning with the 3d grade instruction is in English. About 80 percent of the textbooks produced by the project are in English.

A grant from the Rockefeller Foundation has helped with the problem of language. A Philippine Center for Language Study has been established by the foundation at the University of California at Los Angeles to help the Philippines develop methods of teaching English as a second language. The foundation and AID are working closely together on the printing of 3 million copies of material for the teaching of English developed with foundation funds.

AID believes the textbook project is the most important it has undertaken in the Philippines.

Gallaudet developing new English curriculum

Linguistics and mathematics are the principal tools being used by a team of researchers at Gallaudet College to develop a new English curriculum at the secondary level for deaf students. The team is using the latest developments in these fields and statistics on the performance of Gallaudet students in English during the last 10 years to improve instructional materials.

The project will last 3½ years. During the first year the researchers will develop materials and test them on college preparatory students at Gallaudet. During the second year they will carry out a full-scale classroom evaluation of the materials and revise them as necessary. And during the last year they will conduct rigorous experimental comparison studies between new and conventional techniques.

The project is receiving support from the Cooperative Research Program administered by the Office of Education.

Australia-U.S. exchange program to continue

Australia and the United States have agreed to establish a joint Australian-American Education Foundation to continue the cultural and educational exchange program set up in 1949. The original program called for funds owed to the United States by Australia to be used to finance a cultural and educational exchange program. These funds are nearly exhausted. The new agreement sets up a program that will be modeled on the older one, but the two countries will now be partners. Both countries have agreed to contribute $400,000 a year for 2 years to support the Foundation.

Stamp and postal exhibit opened at Smithsonian

The Hall of Philately and Postal History in the Museum of History and Technology in Washington, D.C., opened this fall by the Smithsonian Institution, is more than a stamp collector's dream. In addition to a representative display of postage stamps, the hall contains exhibits illustrating the history of postal service. These exhibits include tablets with cuneiform writing, a letter on papyrus, examples of the folded letters sent by post before the adoption of the postage stamp, models of vehicles used to carry the mail, a full-scale reproduction of a post office in a country store in the 1880's, and a case illustrating the postal service of the Confederacy.

Exhibits are arranged in chronological order and grouped by historical and technological themes. The scope of the exhibit is worldwide.

Number of Africans on assistance programs increases

The number of African educators coming to the United States for technical assistance programs is increasing. The Technical Assistance Section of the Office of Education reports that it has arranged programs for 290 African educators for the 1965

fiscal year as against 263 last year. The increase reflects two trends in the program insofar as Africa is concerned—new participants and continued participation by countries represented in previous years. Countries taking part for the first time include Cameroun, Dahomey, Senegal, United Republic of Tanganyika and Zanzibar, and Uganda. Those with larger participation this year include Ethiopia (33 last year, 42 this year), Kenya (8 last year, 13 this year), and Liberia (21 last year, 40 this year).

Many of the African participants have held high positions in their countries. To send high officials to study U.S. education is, in general, characteristic of newly participating nations, the Office has found. Later, as the participating nation identifies specific needs and requests and receives programs to fit these needs, it tends to send educators on the practicing level. Reports on the African programs several years from now will probably reflect such a change.

In general, the African nations are asking the Office to arrange two types of programs. The first type, for ministerial teams or officials, is in the form of specially prepared seminars followed by an itinerary of consultations and surveys of educational communities. For example, 13 Kenyan school officials are currently attending a 6-week seminar at the University of Wisconsin-Milwaukee and 10 headmasters in education from Tanganyika are attending a 3-week seminar at the University of Michigan, under the technical assistance program. The participants, when the seminars are completed, take part in an evaluation program to help them understand their experiences in the United States. The second type includes training for a year or longer for participants from countries such as Malawi, West Cameroon, Sudan, and Somalia, usually in the fields of industrial and vocational education. A few participants from countries that have been participating for several years are working toward academic degrees in various fields.

The enthusiasm of African educators on technical assistance programs is often infectious. Here, educators from the Sudan and Liberia confer with John W. Grissom, chief of the Technical Education Section, Bureau of International Education, Office of Education.

The Office has found the people of the United States much interested in Africa. Officials of schools, colleges, State departments of education, and local school systems, school board members, and individual citizens have all cooperated with enthusiasm when asked to assist the Office in providing training to Africans.

Census finds sons better educated than their fathers

Young men are getting more education than their fathers, particularly if they are the sons of white-collar workers and have older brothers with good education, according to the Bureau of the Census. In a study of the changes in educational attainment in a generation, based on the 1962 census, the Bureau found that—for example—although 55 percent of men 20 to 64 years of age in 1962 were high school graduates, only 25 percent of their fathers had finished high school. The younger the man, the more likely he was to have more education than his father: about 43 percent of the men 55 to 64 years of age and about 72 percent of men 25 to 34 years of age exceeded the educational levels of their fathers.

The sons of fathers with white-collar jobs had better education than the sons of manual and farm workers—48 percent as against 28 percent had finished high school. The amount of education a man had was more like his older brother's than his father's: older brothers had completed 11.2 median years of school; fathers, 8.5 years; and the men, 11.8 years.

These facts are from the Census publication *Educational Change in a Generation: March 1962* (Current Population Reports, Series P–20, No. 132) for sale by the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, or any field office of the Department of Commerce. The price is 15 cents.

Letter from Nigeria

EDMUND A. FORD

NIGERIA in all significant respects is one of the leading nations of Africa. It is a rich, diversified land about the size of Texas and Oklahoma, and, with 55 million inhabitants, is by far the most populous country in Africa. Its political stability is outstanding. Unlike many new nations, Nigeria is not controlled by a single political party. Minority parties are vigorous. The Nigerian press is free and active—Lagos alone has five dailies. It is difficult to exaggerate the strategic place Nigeria occupies in Africa and within the world of nations—newborn, adolescent, and mature.

But it is Nigeria's potential not its present status that attracts the greatest consideration, particularly its educational potential. The nation is committed to a massive effort to develop schools for all its citizens, and it has accepted the attendant financial commitment, amounting even to sacrifice.

The United States has sharply increased its assistance to Nigeria since independence in 1960 through the Agency for International Development (AID). The Nigerian, asked what kind of foreign aid his country needs, is apt to say, "More!" But, since it is unwise to attempt to provide more of everything immediately, AID is concentrating on selected key areas.

Because nothing is more important to the development of a nation than a corps of skilled and educated men and women, one area of concentration for AID programs is education. AID now has 14 contracts with U.S. colleges and universities and other educational agencies to undertake selected projects in Nigeria. The institutions staff and operate the projects. The largest single contract is with Michigan State University to develop a modern university along the lines of U.S. land-grant institutions at the University of Nigeria, in Nsukka, Eastern Region.

Three problems are critical and pivotal to Nigerian education. Once the country's economists have determined how many people the country will need in each profession and trade for a given year, the educators must, in turn, determine *what* pupils must study, *how long* the country can afford to keep pupils in school, and *what teacher education programs* will produce the qualified teachers the schools require.

Curriculum

The basic curriculums in the majority of Nigerian schools at all levels are not appropriate to the needs of the country. Nigeria needs, as Nigerians are the first to admit, a complete revision of the curriculum at all levels if it is to provide a general elementary education for *all* and a specialized secondary education for the relatively few who will go on toward the top of the educational pyramid. New courses must be added; old ones abandoned or revised.

Because Nigeria is still close to its colonial past, it is understandable that curriculums designed for the selected few who attended the nation's first schools should have become entrenched and inflexible—just as curriculums were in the United States a century ago. But courageous and farsighted Nigerian educators are exerting all their influence to bring about changes. Unfortunately, such change, involving the basic attitudes of citizens, takes time anywhere. We can only hope that the Nigerians can lessen the traditional lag between the need and acceptance.

Basic changes in the method of learning are fundamental to changes in the course of study. Rote learning has been the rule, and the student's success or failure in school—indeed, his entire future—is determined by his ability to pass several key tests during his school career. The bright student knows the system well, so he learns by rote great quantities of facts that will answer test questions. Woe unto the imaginative teacher who includes anything in his class period not contributing directly to cramming for "The Examination." Because the tests determine the curriculum, it is classical and not unlike the curriculum followed in many U.S. schools before the turn of the century.

British educators and, increasingly, educators from the United States have had great influence on Nigerian education, and most Nigerian educators have studied either in the United Kingdom or the United States. Teachers of both nations have too often been guilty of saying in effect to Nigerians, "Let us assist you; study our systems; let our teachers come into your schools; accept from us what you find worthwhile, reject the rest. Then develop your own system." Well and good and true at the policy level—but what happens in the classroom? There are basic differences between the educational philosophy, methodology, techniques, and even content of education in the two nations. Too often teachers from both are vocally certain their way is the right way and the other dead wrong. The Nigerian, meanwhile, is puzzled by "help" that requires him to choose sides.

Nigerian educators working on a design for the future face a problem of heroic proportions. Even if a group of them—some trained in the United Kingdom, some in the United States—could have a year's sabbatical, under circumstances ideal for contemplation, to design an educational system ideal for Nigeria, they

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Dr. Ford is teacher education adviser to the U.S. AID Mission, Lagos, Nigeria. Before joining the staff of AID, he was specialist for secondary school organization in the U.S. Office of Education.

would find the task difficult enough. As it is, they must plan for the future while working full time in demanding positions. And their problems are compounded by their having to build on a system inherited from a colonial period and by the fact that they must rely heavily on other countries—in large part in the immediate years ahead on England and the United States but on others as well, such as Canada, Ireland, Pakistan, and India—for the teachers and administrators needed in many key posts.

Educational opportunity

It is natural for a rapidly developing nation to desire the immediate establishment of a comprehensive educational system offering educational opportunity to all pupils as in a developed nation. Unfortunately, the initial costs are often prohibitive. An educational system can only be developed gradually over a period of years. Thus it is with Nigeria.

If a realistic goal is set of X thousands entering the universities in 1976, then X hundreds of thousands must begin elementary schooling now, and a sufficient number of secondary schools must be ready in 1972 to accommodate X percentage of these elementary pupils. But will there be enough jobs awaiting the college-educated in 1980? the trained secondary school graduates in 1976? the relatively well-educated elementary school graduates in 1972? or even those graduating from 1964 on? The answers are important. A mass of unemployed illiterates in any nation is a tragedy, but a mass of educated citizens without jobs can mean disaster.

Nigeria must constantly plan for and reevaluate its projects. Even now the country has some unemployed or underemployed university graduates, although thousands of professional jobs are filled by expatriates because no qualified Nigerians are available.

Educational progress is not uniform throughout Nigeria. One region is approaching universal elementary education, but not without serious second thought. Only a fraction of its pupils who complete elementary school can be accepted for secondary schooling—yet the majority seek acceptance. Another region, with only 14 percent of its elementary school-age children in school, plans to raise this percent to 25 by 1970, although the effort will have to be herculean.

It is tragic in any nation at any time to see ambitious, qualified boys and girls refused entrance to the next higher school, but this will of necessity happen often in Nigeria through the years ahead. Nevertheless, an equitable system of admittance to higher education must be developed. Fundamental to this system is a new process of student evaluation and a meaningful procedure for counseling students in terms of aptitudes and occupational opportunities.

Teacher education

There is a bewildering mosaic of teacher education programs in Nigeria at the present time, but a genuine effort is being made to simplify and unify these programs, despite great challenges. The vocation of teaching has not yet attained professional status, although a majority of Nigerian leaders have at one time been teachers. Teachers are grossly underpaid, and teaching is often considered a stepping stone to a better job. Although some teacher training is given at the secondary school level, it is not considered on a par with the secondary school program which prepares university-bound students. The university graduate who would consider teaching at other than the university level is rare. Since 95 percent of the school population is in the elementary school, "teacher" in Nigeria is practically synonymous with "elementary school teacher."

In general, over 90 percent of the elementary school teachers are unqualified by any standards Nigeria would like to set. The typical teacher has the equivalent of a junior high school education plus a smattering of methodology. The majority of teachers in the secondary schools and the universities are necessarily recruited from overseas, particularly from England and the United States. They are relatively well qualified and well paid.

Let us look at each level of education in terms of the teacher education programs needed and feasible.

Elementary school teachers.—Nigeria is making excellent progress with considerable assistance from UNESCO, AID, and other agencies in building and staffing new teacher education institutions. In fact, the projections now look accurate for graduating the number of teachers needed to expand elementary school programs in the immediate years ahead.

The qualitative goal for the preparation of elementary school teachers is to take secondary school graduates into a 2-year teacher education program at the college level. (The similarity of this program to the normal school programs once prevalent in

Enrollment in Nigerian schools and at the university level in 1962, by region and type of school

Level	North	East	West [2]	Lagos [3]	Total Nigeria
Elementary	359,934	1,266,566	1,108,999	98,511	2,834,010
Secondary	10,603	34,283	145,789	12,056	202,740
Teacher training [1]	6,320	11,160	12,954	735	31,169
Universities	426	1,148	1,932	100	3,606

[1] The level of this program is roughly equivalent to secondary schooling.
[2] A Midwest Region has since been created from territory of the Western Region.
[3] Lagos is a federal district, much like the city of Washington, D.C.

Source: *Annual Digest of Education Statistics, 1962;* Federal Ministry of Education, Series No. 1, vol. II.

the United States is apparent.) Since, however, there will not be a sufficient number of secondary school graduates in the immediate years ahead, a secondary level program of teacher education for elementary school graduates will have to be continued.

Two serious problems are under review: How can the thousands of unqualified teachers be significantly upgraded, and where will Nigeria obtain a sufficient number of qualified Nigerian teacher educators to staff the expanded institutions of teacher education?

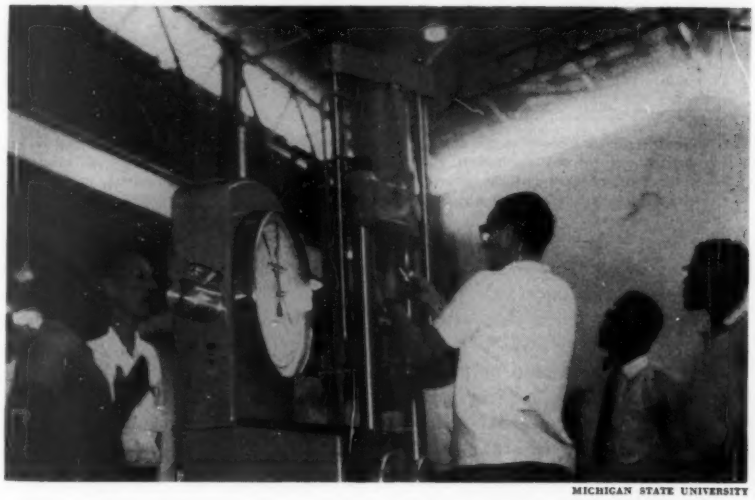
Various programs of inservice education are being considered and tried. But the problem of qualifying Nigerian teachers is not routine, and a truly massive effort will be required. One of the most complicated, frustrating, and baffling problems is teaching English as a second language to pupils and teachers who speak Yoruba, Hausa, Ibo, or other languages.

AID is making a major effort to assist in the preparation of a sufficient number of Nigerian teacher educators by 1968, including additional Nigerian replacements for the non-Nigerian majority of current teacher educators. Current projections, on paper, indicate that the goal can be reached. But with the present grossly inadequate salary structure and the "stepping stone" image of teaching, who can say with certainty that the teachers prepared by the program will not move on to higher paying positions outside of education?

New teacher-educator programs are being established for teacher educators equivalent to a 3-year college program. But such highly educated graduates will be in great demand. Even the recruiting of candidates for this program will be a problem, since four new universities have opened only recently and the pool of well-qualified secondary school graduates for college or university work is barely adequate. The problem of developing a sound curriculum for teacher education can be dealt with, but it is of secondary importance to the dominant problem of how to find enough candidates for teaching in an economy where the secondary school graduate is at such a premium that he can practically take his choice of training—for law, medicine, journalism, business, industry—or education.

MICHIGAN STATE UNIVERSITY

The student body of the University of Nigeria grew rapidly from 220 students in 1960 to 1,808 in academic year 1963–64. Classes in many subjects are crowded.



MICHIGAN STATE UNIVERSITY

Nigeria has purchased from its own resources most of the equipment used at the University of Nigeria. But several foreign governments, including the United States through the Agency for International Development, have contributed equipment for use in teaching physics, chemistry, engineering, and agriculture. Here, a Michigan State University-AID adviser (second from the left) discusses a new piece of equipment with a Nigerian counterpart.

One of the most significant effects of U.S. assistance to Nigeria has been the dramatic innovations and im-

MICHIGAN STATE UNIVERSITY

The Nnamdi Azikiwe Library at the University of Nigeria is the heart of the campus and serves all departments of the institution. The University has a unique program. All students, whatever their specialty, study natural sciences, social sciences, the humanities, and English before going on to specialize in any of 37 fields.

provements in teacher education programs. Many changes are possible because of the support of Nigerian leaders in education just returned from graduate study at U.S. universities. Programs of student teaching have been made an integral part of the program; language laboratories have been installed; several outstanding college libraries are now functioning where none were before; a variety of communications media, ranging from educational television to locally produced audiovisual aids, have become a functional part of the school program; and the effect of experimentation with programed learning materials is beginning to be felt. Other innovations include improved methods of instruction in English and other languages; experiments with the new mathematics; broadening of social study programs, with emphasis on African history and Africa in the modern world; and the study of how the Nigerian child grows and learns.

Secondary school teachers.—A developing nation "in a hurry" soon recognizes that everything cannot be done at once and that priorities must be assigned. An inadequate secondary school system in Nigeria is a major problem, but it is not the top priority item. Top priority has more frequently been given to expanding elementary education and establishing universities. There was a backlog of secondary school graduates to fill the opening classes at the universities a few years ago—many graduates had been waiting 10 or even 20 years for admission. (The median age for students at Nigeria's colleges averages about 10 years beyond that for a comparable U.S. institution.) But as the elementary school system is expanded, as the qualified candidates for institutions of higher learning are exhausted, within the next few years, the secondary school will become the top priority item.

The secondary school in Nigeria (excluding the teacher training schools and technical schools) is a highly selective secondary grammar school offering the only program for college preparation. University admittance is largely determined at the moment the elementary school graduate is admitted or rejected for the secondary school.

Many of the secondary schools may have been forced to close because of the acute shortage of teachers except for hundreds of Peace Corps Volunteers. It is not unusual to find a secondary school with a British principal and a teaching staff of four Peace Corps Volunteers, two Commonwealth expatriates, and two Nigerians.

The secondary school program will soon be caught up in the same whirlpool of change that has swept the elementary school and the university. Change is already present in the two communities with comprehensive high schools complete with vocational curriculums, which AID has helped to establish. These schools are but first steps in the direction that will eventually make a comprehensive program of secondary education available to all children. The success or failure of these two schools, in the judgment of several leading Nigerian educators, may be instrumental in determining the course of secondary education for perhaps a generation.

AID is also helping to establish a new advanced teachers college at Lagos (a 3-year nondegree program) for the preparation of secondary school teachers. Curricular innovations and program modifications similar to those introduced in the preservice program for elementary school teach-

ers are being introduced into the preservice program for secondary school teachers.

A key aspect of every AID project is the counterpart program. The goal of the program is for every U.S. educator to work himself out of a job as soon as possible by helping to train a Nigerian to take his place. The Nigerian Government has agreed to provide a young Nigerian educator to work along side each U.S. educator in the institutions AID helps to staff. The Nigerian's training usually includes from 1 to 4 years of advanced study at a U.S. university.

The universities.—AID and other U.S. agencies have made many significant contributions to Nigeria's young universities. But the effect of U.S. aid on Nigerian university education will for a long time be judged by the developing stature of the University of Nigeria at Nsukka, opened to coincide with Nigerian independence in October 1960. The story of the contributions of U.S. educators to this university will be told at the proper time by the representatives of Michigan State University and their Nigerian counterparts who have labored diligently to introduce U.S. practices of higher education modified to meet Nigeria's needs.

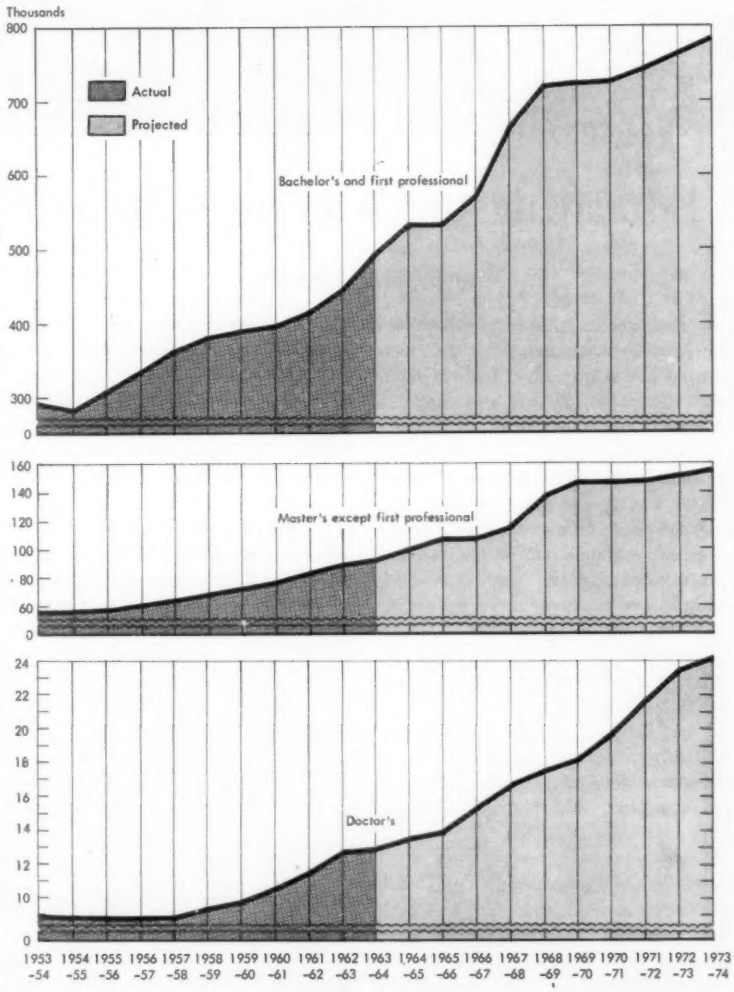
One of the contributions made by U.S. educators to Nigerian institutions is the idea that the undergraduate degree study for a teacher can be appropriately placed within a university. The growth and acceptance of teaching as a profession in Nigeria may well parallel the growth of the idea.

Those of us from the United States working in Nigeria for AID agree that it is exciting and rewarding to be here at this time, for the individual's efforts make a positive difference. An identification with Nigeria and its people will remain with us long after we have left. It will be equally exciting and rewarding, we trust, to read in the years ahead of the continuing development of Nigeria's schools—which we had a small part in helping to come into being "in a hurry."

Statistic of the Month

Earned degrees: Ten-year projections

Nearly one million students will earn degrees in 1973–74, according to Office of Education projections. The total at all levels, 970,900, will almost double the number earned in 1962–63 and triple the number earned in 1953–54. In making these projections, the Office assumes that the relationship between college-age population, college enrollments, and the number of degrees conferred at all levels during the next 10 years will follow the pattern of the last decade. The trend during those years has been toward an increasing percentage of the college-age population to complete college and go on for advanced degrees.—Rose Marie Walker, *educational statistician, Office of Education.*



Earned degrees, by level, 1953–54 to 1962–63 and projections to 1973–74

Educating the American Indian

SELENE GIFFORD

The task force which Secretary of the Interior, Stewart L. Udall, appointed to restudy the "Indian problem" soon after he was appointed in January 1961 recognized that many Indians, while eager for education, for jobs, and for an improved standard of living, are loath to leave the reservations. Others, it found, were more adventurous and were ready to seek a career off the reservations, although even many of these wished to keep their tribal affiliations.

The Bureau of Indian Affairs, under the leadership of Commissioner Philleo Nash, who was a member of the task force, has guided the Bureau's programs into two main directions—education and economic development. They are companion pieces in every way.

The story of how tourist attractions have been constructed, mineral reserves developed, forests made to produce income, deserts converted into irrigated farms and ranches, and how tribal income has been channelled into investments in business, community facilities, and education trust funds—this is a story in itself. But the promises in economic development cannot be fulfilled without an educated tribal citizenry.

In the following article, Miss Gifford tells how the Bureau of Indian Affairs is helping to make education a part of the Indian's everyday life.

THE RESERVATION INDIANS of the 1960's—and there are 380,000 of them—are not uninformed about what is going on in the world, no matter how isolated their reservation may be. Children and adults listen to the radio, probably watch TV—including the westerns—fairly regularly, and occasionally drive to town to shop and see a movie. Indian children, as they mature and grow in perception, can hardly fail to note the differences between the way in which most other Americans live and the poverty in which Indian families too often live.

Somewhere between primary school and high school the Indian child usually comes to understand that the key to a better life is education. He may not want that other life in toto, but he invariably wants the power and means to accept some features of it and to reject others. His deeply imbedded desire, as the late Oliver LaFarge once said, is to "prove himself a whole man in our society without ceasing to be an Indian."

Although the Bureau of Indian Affairs is charged primarily with trust responsibility for Indian lands, it has of necessity been in the business of Indian education in order to help the Indian people to manage their own affairs successfully. The Bureau encourages and to some extent finances the education of Indian children in public schools wherever possible, but it is not always possible. A number of States with substantial Indian population, including California, Oregon, and Washington, have accepted full responsibility for the education of Indians within their borders, and throughout the country more than half of Indian children attend public schools. But in 17 States, including those with a large Indian population like Arizona and New Mexico, the Bureau continues to operate its own schools. Indeed, school administration and school construction still constitute by far the largest item in the Bureau's annual budget.

The Bureau school system is one of special education—geared to the needs of Indian children—to compensate for the social, economic, and educational deprivation in their lives.

Indeed, the Bureau still operates three special nongraded boarding schools to accommodate older children who have never attended any school because there were no seats for them in the crowded Bureau schools and no public schools that could support them. These special programs, instituted at the close of World War II, provide a 5-year curriculum which emphasizes language, arithmetic, social living, and trade instruction. The need for such pro-

Miss Gifford is Assistant Commissioner of Indian Affairs, Bureau of Indian Affairs, Department of the Interior.

grams is now fast declining, as sizable Federal appropriations for elementary school construction in the past few years have made other schools available. The remaining special programs are still needed for some Indians; moreover, they have attracted the serious interest of educators in underdeveloped countries.

Today's methods of teaching English are the reverse of earlier methods. The earliest methods were based on the premise, since proved erroneous, that the speediest way to teach Indian children to speak English was to remove them from everything that was Indian. The intent was to have them forget their Indian tongue through disuse. Older Indians, educated during this earlier regime, can still recall times they were punished for speaking their Indian language.

This method retarded the children's language development by blocking communication in their native language, which they knew, before they could communicate in English, a language which they did not know. As a result the children not only lacked the ability to handle English but also lacked the ability to handle their native language that was commensurate with their age maturity.

They found themselves, after years of schooling, unable to converse in their Indian tongue on an adult level with their unschooled parents and grandparents and also unable to converse in English with their English-speaking friends and associates. But worst of all was the damage done to Indian personality, since these forced methods subtly conveyed to young Indians an attitude of inferiority toward their Indian culture and language.

Elementary schooling in the special Bureau style has contributed to an increase in recent years in the number of Indians who succeed in high school. The number of students graduating from Bureau high schools totaled 1,320 in school year 1963–64, an increase of 256 over the previous year. Most Indians are, however, in public high schools, which do not report by ethnic groupings. However, we can judge to some extent the increase in the number graduating from high school by the increase in number attending college: from 4,500 in 1962 to more than 6,000 in 1964.

Many Indian boys and girls who are graduates of the Bureau elementary schools are successfully placed in public general high schools. For others, the Bureau has expanded operations in two highly specialized schools that combine high school and postsecondary vocational education. One of these, Haskell Institute at Lawrence, Kans., offers a wide variety of occupational training courses along with a wide variety of academic courses, but it is noted in particular for its printshop, which turns out the special texts and readers used in Bureau-operated elementary schools. Another specialized school is the Institute of American Indian Arts in Santa Fe, N. Mex., which was opened 2 years ago as a school of applied and practical arts to foster the native talents of Indian youth from all parts of the country. The Sante Fe school has already attained fame in the southwest for the quality of arts and crafts produced by the students, whose inspiration comes from a handpicked faculty of Indian teachers and artists.

Both the Lawrence and the Santa Fe schools stress general academic subjects through grade 12, and vocational offerings at grades 13 and 14.

The Bureau's goal for the 1970's is for 90 percent of Indian boys and girls in the high school group to graduate from high school and for 50 percent of the high school graduates to attend college. The number of Indians attending a college or university remains regrettably small even though the number of scholarships available to them from Bureau, tribes, State, and private source has risen sharply. The total available last year was more than $2.3 million which would provide a grant of some sort or size for almost every Indian young person who could qualify for it academically.

In addition to its conventional school program, the Bureau also conducts a summer program for children. Every summer since 1960 the Bureau has conducted project sessions on many reservations in an effort to interest and usefully occupy children on vacation. Last summer the program attracted almost 25,000. The children spend most of the session on academic subjects but they also work on projects and take educational trips.

The Bureau also conducts an adult education program which now annually serves 24,000 Indians and Alaskan natives who did not receive adequate schooling in their youth. This has gone beyond the basic literacy program to include instruction that will help Indians understand

Frank Tenorio, instructional aid, talks with Felipe Chavarillo, Pueblo Governor, and Nat Sanchez.

many of the civic, political, and social problems on the reservation.

For the Indian man or woman of up to 35 years of age who wants to fit himself or herself for a particular occupation either on or off the reservation an adult vocational training program is available. During fiscal 1964 about 3,500 Indians received training in hundreds of occupations, ranging from auto mechanics to high-level electronic and medical technologies. The Bureau pays all costs of training in any public or private institution, including all family expenses, transportation, food, clothing, and health services while the head of the family is readying himself for a job. An employment guidance service which operates in eight major cities of the country as well as on the reservation helps the Indians to find a job.

The education programs of the Bureau of Indian Affairs—reaching out to all ages—add up to a forthright acknowledgment that economic betterment of the individual is a worthy, and, indeed, primary objective for the times in which we live.

Shorthand: 60 B.C. to 1884

The interest of the Office of Education in office occupations is as old as the Office itself. I recently came across proof of this fact in *The Teaching, Practice and Literature of Shorthand*, by Julius E. Rockwell, which the Office published in 1884.

On February 26, 1884, John Eaton, who was then U.S. Commissioner of Education, wrote to the Secretary of the Interior:

"The economic value of stenography is already abundantly illustrated in connection with congressional and all other legislative work * * * the courts, and in * * * extensive correspondence, whether official or private. The demand for this clerical qualification has greatly increased within a few years. Our educators and all others interested in meeting this demand specially need the valuable and instructive facts contained in the accompanying manuscript, and I therefore recommend its publication as a circular of information."

Today's teachers will very likely find that the report is historically interesting and useful in gaining a new perspective on methods and practices in teaching shorthand. The following is a precis of the report.

Shorthand systems.—There is no proof that shorthand systems existed before 60 B.C., when Marcus Tullius Tiro invented a shorthand system which was used in the education provided for some of the Roman emperors.

Shorthand was neglected during the Middle Ages and did not come into prominence again until the Elizabethan Age. In 1588 Timothe Bright invented a new system which included the phonetic principle. In 1590, Peter Bales, and in 1602, Cuthbert Burbie, devised new systems. The first shorthand system based on the English language was invented by John Willis in 1602.

In 1883, 3,295 shorthand systems were reported, 780 of them based on English language.

Shorthand in the United States.—In 1882, approximately 12,470 persons received instruction in shorthand, 10,197 in school or organized classes. More than two-thirds of these persons were men. The Douglass School of Phonography in Philadelphia first offered instruction in shorthand in 1851; it was the earliest of the schools that were still in operation in 1884. By 1884, there were 276 schools offering organized programs in shorthand, and 60 of them were also offering instruction in typewriting.

Shorthand was then, as now, a vocational program leading to a career in stenographic work. Its early development as an occupation had been stimulated in several States by laws authorizing the employment of court stenographers and court reporters: in New York in 1860, Maryland in 1864, Pennsylvania in 1866, and Maine and Wisconsin in 1867.

Because shorthand was basic to the profession of court reporting, several attempts were made to organize shorthand societies. Among the earliest were the Stolze Stenographic Society of New York in 1872, the Iowa Shorthand Association and the New York State Stenographers Association in 1876, Pennsylvania Stenographers Association in 1877, and the Nebraska State Stenographers Association in 1880.

Shorthand professional publications.—Much of the professional activity in the field of education for office workers has been stimulated by monthly magazines specializing in items of interest to teachers of stenographic occupations. In 1884 a dozen or more magazines were published monthly in the United States and Canada; among them, these:

The American Shorthand Writer
The Cosmopolitan Shorthand Writer
The Exponent
The Modern Reporter
The Phonetic Educator.

The Teaching, Practice and Literature of Shorthand includes bibliographic references to 478 shorthand texts, reproductions of pages of some books and several large page inserts carrying reproductions of 113 different shorthand alphabets, covering the period 1602 to 1882.—BRUCE I. BLACKSTONE, *specialist, Office Education, U.S. Office of Education.*

Science in the Elementary School

PAUL E. BLACKWOOD

NEARLY ALL public elementary schools in the United States teach science at some time during the school year. This statement, though true, covers wide variations. Schools treat science as a separate subject or as incidental to another subject. They give several hours a week to science teaching or only minutes. A few schools have special teachers, but most rely on the classroom teacher, with or without the help of a specialist, to teach science. Budget allowances for science equipment and material are ample and scant—and every degree between.

These facts and others have come to light in a recent study completed by the Office of Education on science teaching in the elementary schools of the United States in school year 1961–62. A full report on the study will be issued in an Office publication (*Science Teaching in the Elementary School: A Survey of Practices, 1961–62*) now in press. This article is a report on some of the highlights of the findings of the study.

Information for the study was obtained from a questionnaire sent to a representative sample of the Nation's more than 87,000 public elementary schools. Schools in every State were included, but the study does not report the status of science teaching by region or by State. Questionnaires were sent to individual, general purpose elementary schools rather than to school systems, and they were completed by principals with the help of teachers.

Replies to the questionnaire have been broken down by enrollment for schools and administrative units (districts). The breakdowns by schools are *800 and over, 400 to 799, 50 to 399,* and *49 and under;* by districts, *25,000 or over, 6,000 to 24,999, 3,000 to 5,999, 600 to 2,999,* and *599 and under.*

Dr. Blackwood is specialist for elementary science in the Curriculum and Demonstration Program Branch of the U.S. Office of Education.

Objectives

The questionnaire began by asking schools to rate as *very important, of some importance,* and *of little or no importance* 10 commonly accepted objectives of science teaching. The respondents rated nearly all of the objectives as *very important* or *of some importance.* Only one—to develop scientists—was not considered *very important* by at least 40 percent of the schools. See table 1.

Extent of science teaching

Only a very small percent of all schools did not teach science at all. Three-fourths or more taught science at every grade level except kindergarten for at least one-half the year; 4.5 percent did not teach science in kindergarten, and 4.4 percent did not teach it in the first grade.

The percent of schools teaching science more than half a year varied by grade and size. More large schools than small taught science more than half a year in almost every grade. In the third grade, for instance, the percent ranged from 70 in the *49 and under* schools to 90 in schools enrolling *800 and over.* Figure 1 gives the percent of public elementary schools teaching science more than half a year by grade.

Teaching patterns

Schools were asked to indicate which of these five titles most aptly described the science teaching pattern they followed:

(1) *Taught as a separate subject,* (2) *integrated with other subjects,* (3) *incidental,* (4) *separate subject*

Table 1.—The importance of 10 objectives of science teaching as rated by public elementary schools (ranked by percent of response to *very important*)

Objective	Very important	Of some importance	Little or no importance
1. To help pupils develop curiosity	87.0	12.0	1.0
2. To help pupils learn to think critically	85.2	14.3	0.5
3. To introduce pupils to typical science topics—weather, electricity, plant and animal life	84.3	14.9	.8
4. To help pupils acquire knowledge of their environment	84.2	15.5	.4
5. To help pupils develop an appreciation of their environment	82.4	17.1	.5
6. To develop problem-solving skills	73.9	24.2	1.9
7. To develop in pupils a sense of responsibility for the proper use of science	69.3	27.7	3.0
8. To prepare pupils for high school science	42.8	45.2	12.1
9. To develop hobbies and leisure-time activities	40.9	50.4	8.7
10. To develop scientists	17.6	51.8	30.6

and incidental, and (5) *integrated and incidental*. The replies indicate that the grade level made a difference. In the upper grades schools most often followed the pattern *separate subject and incidental;* in the lower grades, *integrated with other subjects*. In other words, the percent of schools teaching science as a separate subject increased by grade. In the *400 to 700* group of schools, for example, the range was from 13 percent in kindergarten to 89 percent in the eighth grade. See figure 2.

Departmentalization

Most schools were not departmentalized, that is, they did not provide special science teachers. Only about 15 percent were departmentalized at some grade level. This percent varied by school size as follows:

Enrollment:	*Percent of departmentalization*
800 and over	36.5
400–799	21.8
50–399	18.5
49 and under	.08

The teachers

The study found that the classroom teacher was the person most frequently teaching science in all grades in all schools. But the percent of schools in which science was taught only by a classroom teacher decreased progressively from the first grade (86.5 percent) to the seventh (72.9).[1] About 8 percent of the schools provided special assistance to the classroom teacher through a specialist in the central office. Although a large percent of the smaller schools did not have special science teachers, schools in every enrollment group had specialists available, particularly the *800 and over* group. About 30 percent of the schools in this group reported that a special science teacher from a central office was available to help classroom teachers in kindergarten through grade six.

[1] The grades 7 and 8 represented in this report are in schools organized by grade levels, kindergarten through grade 8. It does not report on conditions in grades 7 and 8 in junior high schools, where the percent of special science teachers is higher.

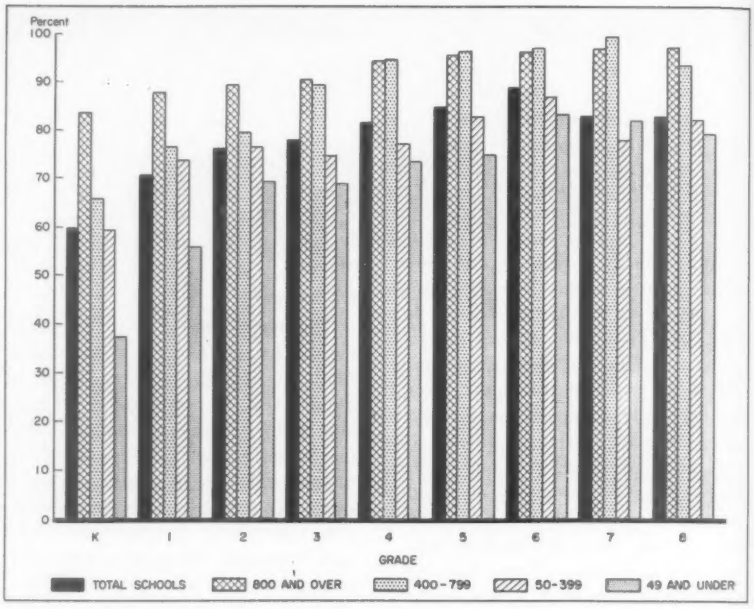


Figure 1.—Percent of public elementary schools that teach science more than half a year, by grade

A small percent of the schools reported that television was the primary source of science teaching. Though the percent was small, it may be significant in view of the widespread interest in educational television. The practice was most common in the large schools; none in the *49 and under* group reported using television.

See table 2 for the findings on the source of science teaching in the elementary school.

Table 2.—Source of science teaching in public elementary schools: Percentage by grade

Source	Grades—all schools								
	K	1	2	3	4	5	6	7	8
Classroom teacher only	84.0	86.5	86.6	84.4	82.6	80.4	77.0	72.9	72.9
Classroom teacher with help from science specialists attached to school staff	5.5	5.0	4.8	6.2	6.8	6.2	6.4	4.4	4.6
Classroom teacher with help of science specialist from the central office staff	10.1	7.5	7.5	7.6	7.6	7.6	7.6	1.5	2.5
Special science teacher on the school staff	.0	.1	.3	.3	.9	2.2	3.4	15.7	15.8
Special science teacher on central office staff	.0	.0	.0	.1	.1	.1	.1	.1	.0
Classroom teacher with special competence in science in lieu of regular classroom teacher	.0	.6	.6	.8	1.0	1.6	3.3	4.6	4.0
Television	.4	.3	.3	.7	1.1	1.8	2.1	1.0	.1

Consultant services

About 42 percent of the schools had some type of consultant help in science available to teachers. Of these, nearly 40 percent depended on general elementary supervisors. About 15 percent had elementary science consultants, although the percent ranged from 39.5 percent in the *800 and over* schools to 5.6 percent in the *49 and under*. High school science teachers were available for consultation in 27 percent of all schools having help, particularly in schools in small administrative units.

The questionnaire asked schools which had consultant service to indicate by grade level whether teachers used this help *very often* (at least once a week), *occasionally* (once a month), or *rarely or never* (less than once a month), and to indicate on a list of nine the ways they used consultants. Roughly 50 percent of the schools used consultants *very often* or *occasionally* in kindergarten through grade 3 and about 60 percent used them *very often* or *occasionally* in the upper grades. The responses to the list of ways consultants are used show considerable variation from one enrollment group to another, but all groups indicated that consultants were used most often to provide materials and to plan and consult with teachers. See figure 3.

Curriculum sources

The questionnaire asked schools to indicate the frequency of use (*very often, occasionally,* or *rarely or never*) by grade of (1) State guides for courses of study, (2) administrative unit guides, (3) local school guides, (4) textbooks, and (5) teacher's own ideas. Over one-third of the schools said they used guides provided by the State *very often* in grades 7 and 8 and over one-fourth in grades 1, 2, and 3. Over 50 percent of the *800 and under* said they used State guides *rarely or never*. But about 50 percent of the *49 and under* schools used State guides *very often*. All in all, schools in the small administrative units tended to use State guides more often than schools in other units.

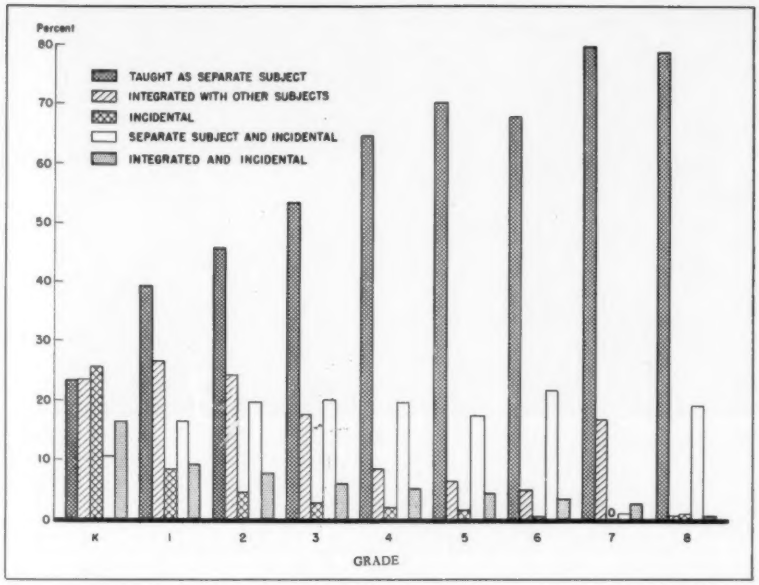


Figure 2.—Percent of public elementary schools that teach science by various patterns, by grades.

Local school guides.—A higher percent of the larger schools used local guides *very often* than did the smaller schools, at every grade level. But a relatively high percent of schools *rarely or never* used local school guides, probably because they were not available.

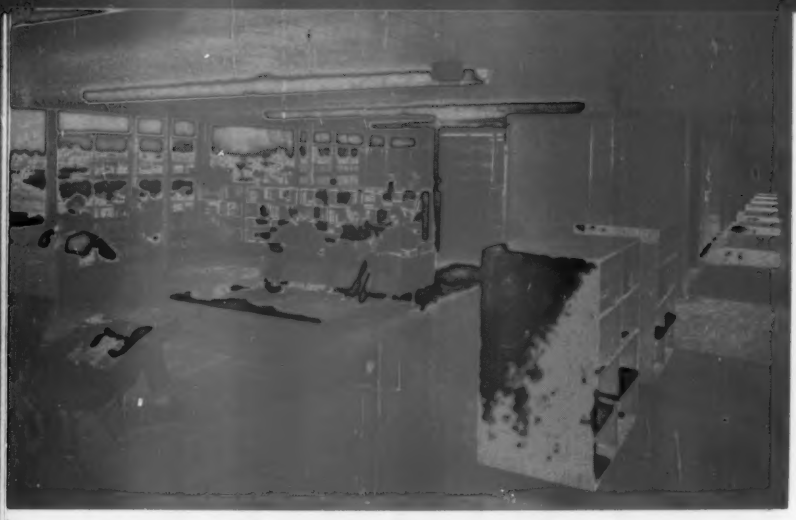
Textbooks.—A high percent of the schools, 78.1 to 90, reported that they used textbooks *very often*, except in kindergarten (where textbooks are rarely used at any time). The percent of schools using textbooks *very often* increased from the lower grades to the upper grades in every administrative unit enrollment group.

Administrative unit material.—The precent of schools using science

(*Continued on p. 27*)

Table 3.—Barriers to effective science teaching in public elementary schools ranked by replies from all schools and by enrollment groups

Barrier	Ranking by school enrollment groups				
	All schools	*800 and over*	*400 to 799*	*50 to 399*	*49 and under*
Lack of consultant services	1	4	3	1	2
Lack of supplies	2	7	5	2	1
Inadequate room facilities	3	1	1	13	8
Insufficient funds	4	6	6	3	3
Teachers lack sufficient knowledge of science	5	2	2	4	7
Insufficient inservice opportunities	6	10	8	7	5
Teachers lack ability to improvise	7	5	7	6	10
Teachers do not know methods	8	3	4	5	9
Not enough time given to science teaching	9	8	10	8	4
No community support	10	12	11	9	6
Teachers lack interest	11	9	9	10	13
No definite curriculum	12	13	12	11	12
Other subjects considered more important	13	11	13	12	11



◀ *Browsing area, A & M Consolidated High School, College Station, Tex.*

Pupils will use a library that creates an attractive environment and a feeling of serenity. The library can do both of these things if it has ample space, harmonious arrangements, blending and contrasting colors, functional furniture and equipment, and good sound control.

JAMES L. TAYLOR

Planning Functional Quarters for the School Library

▲ *Instructional materials center in the library, Evanston Township High School, Evanston, Ill.*

The audiovisual area, acoustically treated, provides a place where teachers can preview and pupils use films, filmstrips, slides, records, and tape recordings.

▲ *Carrel in senior high school library, Garden City, N.Y.*

Carrels, or small enclosures containing books and other materials, encourage pupils to spend their free time in independent study.

Almost every change being made in the school instructional programs is affecting the school library. But none of the changes is affecting the essential character of the library. The good library remains what it has always been: the hub of the school, a place where all pupils feel at home, where they feel a freedom they may not feel in the classroom—freedom to find ideas they recognize as their own, freedom and time to find themselves.

Any changes made to suit the school program can strengthen, not weaken these features of the library. They can broaden the scope of its services, give both teachers and pupils new materials and equipment to work with and a quiet place to work in; they can add beauty and usefulness. In short they can make the library truly functional if they are properly planned by architects in cooperation with persons who know what facilities are needed and how they will be used.

Conference rooms opening off the library reading rooms in the James M. Bennett Junior High School, Salisbury, Md. ▶

Small soundproof conference rooms are needed by groups of pupils and teachers or librarians working together on reports or projects.

▲ *Reading room and patio, Central Junior High School Library, Holly Hill, Fla.*

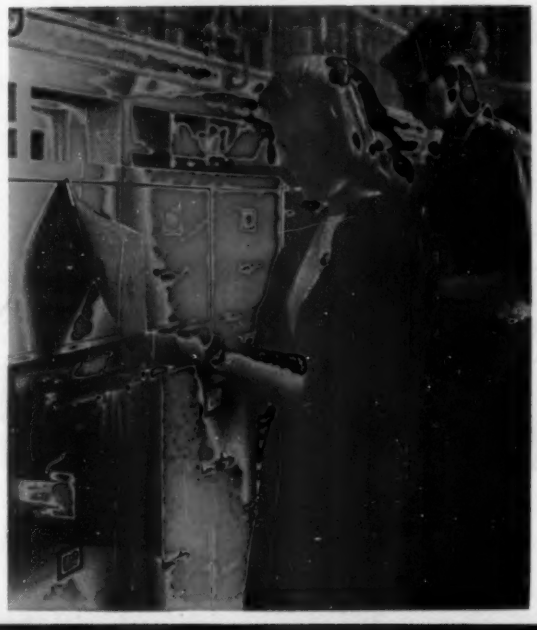
A patio adds beauty and usefulness to the library. It offers older pupils and teachers a quiet place where they can discuss or plan group projects or programs and encourages the librarian to conduct storytelling hours for the smaller children.

Instructional materials center, in the Edmonds School Library, Alderwood Manor, Wash. ▲

New libraries are making the audiovisual centers a part of an instructional materials center.

Reading room, Evanston Township High School, Evanston, Ill. ▶

A reading room generally needs bookshelves for three-fourths of the book collection and file cabinets for other materials such as pamphlets.

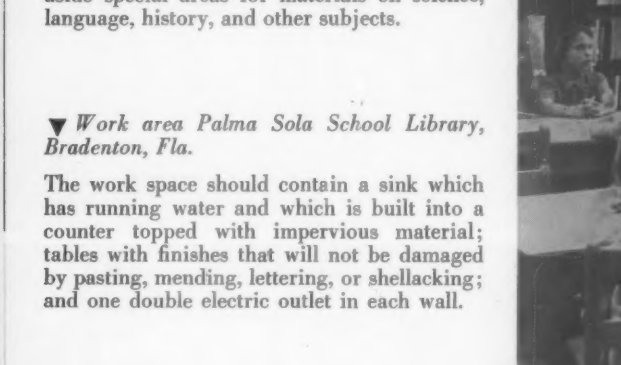


Corner of the reading room, Osceola Elementary School Library, Ormond Beach, Fla. ▶

Some library quarters include a room in which a class can use both references and audiovisual media; other quarters set aside a corner of the reading room for classwork. Some schools with departmentalized libraries, set aside special areas for materials on science, language, history, and other subjects.

▼ *Work area Palma Sola School Library, Bradenton, Fla.*

The work space should contain a sink which has running water and which is built into a counter topped with impervious material; tables with finishes that will not be damaged by pasting, mending, lettering, or shellacking; and one double electric outlet in each wall.

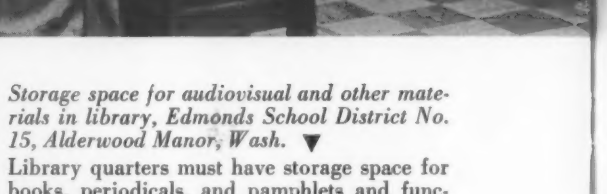


Storage space for audiovisual and other materials in library, Edmonds School District No. 15, Alderwood Manor, Wash. ▼

Library quarters must have storage space for books, periodicals, and pamphlets and functional storage space and compartments for audiovisual materials and equipment.

▼ *Reading room with north exposure, Seabreeze Senior High School Library, Daytona Beach, Fla.*

Racks of paperback books, comfortable chairs, and good lighting attract students to the library.



The persons who know these needs best are the principal, teachers, and librarian who will use the library. Before they begin their planning, they should be familiar with library standards set up by the various States and the American Library Association (see American Association of School Librarians, *Standards for School Library Programs*. They should not, however, depend altogether on them but should strike a balance between ALA's general specifications and standards and the needs of their own school. Once they have agreed on general plans they should begin working with the architect. They should give him enough detail for him to clearly understand the relation of the library to instructional programs.

He should, for example, know that schools are making wider use than formerly of books and periodicals, television programs, recordings, films, filmstrips, and teaching machines; that they are allotting more time for pupils to spend in independent study and for teachers to work with pupils in small groups, large groups, and individual conferences. He should understand that because of these changes the library must accommodate many activities, including reading, guidance in listening and viewing, and using a library; that it will be used by pupils and teachers individually, in groups, and in classes; that library materials will be used in classrooms, laboratories, and study centers.

Without such information he cannot determine the requirements for space, equipment, and arrangement of library elements. But a creative architect with good educational specifications and a knowledge of library equipment should be able to redesign old facilities or design new ones to suit the school programs.

A good school library, whether in an elementary, junior high, or senior high school, will generally need a reading room or rooms, workroom, librarian's office, conference rooms, library classroom, a stack area, storage space, and an audiovisual area.

The design of the school building influences the location of the library in the floor plan and its usefulness. In the one-story, finger-type design, the library may very well be housed in a wing centrally located, convenient to the classrooms. If glass is used extensively in outside walls, librarians and principals generally prefer short windows which leave more space for shelving and may prevent glare from the outside.

The library should be away from the music department, gymnasium, playground, shop classrooms, and auditorium. It should never be hemmed in between stairwells and corridors. If it is to be used after school hours, on Saturdays, and during the summer, it should be on the ground floor.

The entrance to the library from the lobby or corridor should be inviting, and the whole library attractive. Truly functional library quarters are beautiful for they help meet pupils' physical and esthetic needs as well as their intellectual needs. No matter how ingeniously the library is designed or how well stocked with books it cannot be truly functional if pupils do not find the effect appealing—if beauty is missing. Planners should bear in mind that pupils develop best in beautiful surroundings, that good color is indispensable to good architecture, that color has a psychological effect on people, and that quiet colors are best for work areas. In selecting colors the planners should consider the size of the library in square feet, design, geographical location, outside details, type of lighting fixtures, and age of the pupils.

The reading room should be large enough to accommodate from 10 to 15 percent of the pupils enrolled, allowing from 30 to 35 square feet per pupil. If a library needs seating for as many as 100 pupils two reading rooms should be provided. If one room serves both elementary and secondary pupils, each group should have its own area, separated by counter-height shelving. The total area of the library suite is greater if the collection includes audiovisual materials.

Bookshelves should line much of the available wall space in the library. In elementary schools, open shelves should be five book spaces high within reach of children; in high schools, seven book spaces high. In both, the shelves should be easily adjustable. The lowest shelf may be as close to the floor as 4 inches.

Furniture and equipment should be of good quality and suitable to the use to be made of it. But before buying an item, officials should carefully analyze the use to be made of it. For example, they will want to select sturdy and attractive tables and chairs of different heights to suit the size of the pupils; they may want round or oblong tables or some of both as long as they will fit comfortably together in the reading room, with at least 5 feet between them and between tables and shelves. Charging desks vary in shape, size, and finish, depending on the space available, and the color and styling of other furniture.

In large measure the educational usefulness of the library depends upon proper light, heat, and air conditioning, sound control, aesthetic appeal, and adequate space. The goal in lighting the library must be to allow all who use it to see comfortably

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Mr. Taylor is an Office of Education specialist on planning of school buildings. He is the author of a number of Office publications dealing with school facilities and coauthor of Library Facilities for Elementary and Secondary Schools, *now in press. To gather information for his study of library facilities, Mr. Taylor visited schools in 16 States, where he interviewed principals, teachers, and librarians in 24 elementary schools, 17 junior high schools, and 31 senior high schools.*

without undue distraction. Lighting specialists generally accept the brightness-balance concept of light, and take special care to use equipment that will minimize the concentration of the lighting directly downward, and to see that fixtures attached to ceilings are well above the line of vision.

The maintenance of a proper temperature, both cooling and heating, in the library is important to the health, alertness, and comfort of the pupils and teachers who use it and therefore important to the program.

To control sound in their libraries, schools are using several methods such as acoustical materials on walls and ceilings, carpeting on floors, draperies and pictures on walls, and unparallel walls and uneven ceilings. Careful planning is necessary to prevent readers from being disturbed by activities in the audiovisual department.

Floors should be resilient and quiet, with attractive color which blends with the walls, the ceiling, and furniture. Some schools using carpeting in their libraries maintain that it not only helps control sound but also helps improve pupils' attitudes.

It may be "penny wise and pound foolish" for schools to recondition library quarters that are improperly sized and arranged for library services. In all likelihood major remodeling and redesigning would be necessary to provide the space and equipment the school program needs to insure the dignity, composure, and feeling of well being of pupils. Before deciding to recondition such a library school officials might question the wisdom of crowding pupils in library quarters when most other phases of curent life are recognizing the contributions ample space is making to an improved standard of living.

Educational Records Are Useful in Making Decisions

ALLAN R. LICHTENBERGER

ALL PROGRESS and problems in educators' attempts to improve their records relate to three questions:

What are the *purposes* of records?

What information should be put into records?

In what form should information be recorded?

This is not an oversimplification. The questions must be repeatedly asked and answered in the best possible manner. In evaluating gains, educators should identify and reidentify problems, for they change as progress is made.

While sound purposes of record keeping in education may change but little, shifts in emphasis amount to important change. Of all the changes since educators began keeping records, the most significant has been the growing emphasis in the past decade on the uses of records in making decisions. Although educators have always used some record information for management purposes, their primary purpose in maintaining it has been to meet the requirements of law, regulations, and the general demand for accountability applying to all public agencies.

Evidence of greater use of record information in making decisions in local school systems is easily noted, as I hope to show in comments that follow. The shift in emphasis to purposes of decisionmaking as the dominant service of records does not, however, militate against their services for other purposes. It strengthens them. Their uses for purposes of accountability, reports, archives, production of statistics—all inherent in the content of records that serve management effectively—are served better when the records are designed and used for making decisions. Few changes in American education have the potential for broad influence on the programs of school systems that the growing emphasis on better use of information in management decisions has.

The change in emphasis in purpose is reflected in a trend among school systems toward including more information in their records. While need for additional information may have always existed, there was until recently a general resistance to increasing the number of record items. Even the impact of modern data-processing machines on accounting systems does not explain all of the demand for new record information. Nor are items being added only because of laws and regulations. Items are added because they are needed to aid in making decisions. That purpose is education's answer to the question of what information should be put into records. Few indeed are the school systems of the Nation that are not affected by this trend.

The problems arising from the addition of record information are, in part, those of any growth and change.

Mr. Lichtenberger is a specialist in standard terminology and definitions and head of the Office of Education unit responsible for developing handbooks on educational records and reports. He came to the Office from the Nebraska State Department of Education, where he was director of research and statistics.

Not the least of these is the matter of how items are to be put into records. Here again, trends are appearing. One of these is the growing practice of recording items, as far as possible, in *basic* or irreducible form, as opposed to *combined* form. A *basic* item cannot be broken into smaller components. A *combined* item is made up of two or more *basic* item components. Items in *basic* form offer a great advantage: They can be related or combined in great numbers of possibilities. *Combined* items are limited in this respect. Since school systems in making decisions want the advantages that *basic* record items offer, this trend is universal.

I do not want to give the impression that *basic* record items are invariably easy to identify. Experience is proving that numbers of items long regarded as *basic*, and deeply rooted through custom, are made up of two or more components. Their inclusion in records tends to impede the development of systems of recordkeeping which permit the user to relate and interrelate items over a vast range. As the decisionmaking purposes of educational records are realized, this difficult problem of recognizing *basic* items, items traditionally maintained as combined items, is being solved.

There is a continuing and increasing demand for compatible and comparable information among all school systems. This simply means that school systems want not only basic items for their records but also items which mean the same in one school system as they do in all others. There are several factors in the increase in demand. One is the necessity for standardized items in modern machine applications. Another is the easier communication of information composed of standardized items, which has stimulated all uses of information. The most impelling factor of all, however, is the growing realization that improved comparability of educational information is the most promising means we possess for bringing about assessments of quality of education.

Again, the problem is one of finding better and faster ways of using education's forces to come to agreement on words and definitions which make items "standard." Much work has been done, but much still needs to be done in this area alone. It is a fact, however, that many record items are now being used in standard form throughout the Nation. Two decades ago not one was used nationwide in standard form. It is a change of great consequence.

Arrangements are changing

Among the most noticeable of changes is the establishment of new and different arrangements of items in the records of school systems. These arrangements have the purpose of yielding information quickly *as a product of the record* instead of through time-consuming extraction of facts from scattered items.

An example of arrangement of record items to facilitate their use is in the *object-function* method of finance accounting. In this arrangement of finance records, expenditure items are recorded both in terms of "object" purchased (personal services, equipment, supplies, and the like) and in terms of services or function performed by the object purchased. Each salary payment, for example, is recorded both in an object account, "salaries," and in an account indicating the service or *function* for which the salary was paid. This gives management an advantage in that the extent of all salary payments is revealed in one *object* account, and the extent of salary payments for each service is shown in separate *function* accounts. In similar manner the cost of all supplies appears in one *object* account, and the cost of supplies for each service is shown in a *function* account reserved for that service. The *object-function* arrangement of items has appeared in educational finance accounting fairly recently.

A new arrangement, somewhat comparable to the *object-function* arrangement in finance accounting, has been developed for use with staff records. (A handbook on the new method, entitled *Staff Accounting for Local and State School Systems*, by Allan R. Lichtenberger and Richard J. Penrod, is being prepared and will be published by the Office.) It is referred to as *assignment-function* accounting and is used to advantage in records about school staff members. A recognized staff assignment is recorded both in a classification in which *all* similar assignments are included and in the classification indicating the personal service or function performed by the person or the staff assigned.

Take, for example, a staff member's assignment to teach. It is recorded both in an assignment category called Teaching Assignment and in the *function* category or account which indicates what service the assignment performs. In most instances this *function* account would be called Classroom Instruction. It could be Teaching, Other Than Classroom Instruction, and would be if the function was performed at the home of the pupil, for example. In any case, management could know quickly the number and extent of all *teaching assignments, and* the number and extent of teaching assignments in each function they serve. In similar manner the records could show the number and extent of other staff activities such as *clerical assignments*, or *supervising assignments*, or *counseling assignments*, and the separate *functions* which their performances serve.

In the establishment of more systematic or functional arrangements of items, records are being used to greater purpose in making decisions in education. This is a definite trend, certain to continue.

From the moment that an interrelation of items within an area of record keeping was recognized as useful, the possibilities of relating and interrelating items among all of the

areas were given attention. It is not an idle dream that items about pupils, staff, program, property, and money can, through functional arrangements, be quickly related or combined. This is within our grasp, capable of enormous impact upon decisionmaking.

Under the new arrangement two areas can be used together to great advantage—for example, the *assignment-function* account and a part of *object-function* accounts. If the *object* account, Salaries, and the *function* account, Pupil Transportation Services, are put beside the staff *assignment* and *function* accounts, a relating of their items can quickly yield not only the amount of salaries paid for pupil transportation services but also the extent and amounts of such salaries paid for various assignments, including assignments for *direction and management, vehicle operation, crafts or trades, custodial,* and *clerical* assignments serving the *function,* Pupil Transportation Services. In this way much expanded information is quickly available *as a product of records* simply by arranging record items on finance and staff.

Total system is necessary

No longer can the traditional areas of educational records exist separately; they must become parts of a total system of record information in which each item can be used with any other item. Already there is evidence that schools are making an effort to create total systems. In their reports and letters schools have referred to the relating of items in the "pupil track" of information to those in the "staff track," and the "property track," and the "finance track," and to the coding of information for machine applications so that items on program information can be quickly related to staff, pupil, or finance items. Thus another trend is discernible in keeping records about education. It is a trend reflecting educators' efforts to improve decisionmaking.

For a number of years, the States and several interested national educational organizations have cooperated with the U.S. Office of Education in the preparation of manuals of record items and terminology. The Office has already published manuals—they are called national handbooks—covering finance and property. They are: *Financial Accounting for Local and State School Systems, Standard Receipt and Expenditure Accounts* (State Educational Records and Reports Series: Handbook II, Bulletin 1957, No. 4), by Paul L. Reason and Alpheus L. White, Washington, U.S. Government Printing Office, 1957; and *Property Accounting for Local and State School Systems* (State Educational Records and Reports Series: Handbook III, Bulletin 1959, No. 22) by Paul L. Reason and George G. Tankard, Jr., Washington, U.S. Government Printing Office, 1959.

New manual is in press

A third manual is in press: *Pupil Accounting for Local and State School Systems* (OE–23035), by John F. Putnam and George G. Tankard, Jr. Two other manuals are being cooperatively prepared by Office staff members: *Instructional Program Accounting for Local and State School Systems,* by John F. Putnam and W. Dale Chismore, and *Staff Accounting for Local and State School Systems,* by Allan R. Lichtenberger and Richard J. Penrod. There are striking parallels between the handbooks and trends in recordkeeping in the States.

The handbooks *identify* items. Most of the items are presented in *basic* form. Each item is defined so that in universal use it is *standardized.* The items are *classified* in functional categories. They are selected in the understanding that they are needed in the operation of school systems and will aid in making *decisions.* Moreover there is nationwide agreement among educators on the items selected.

These parallels indicate that the handbook program is strongly a part of the movement through which records of education are being improved. Questions on the direction and purposes of the program become vitally important to the direction and purposes of educational records.

It must be clear that earlier handbooks must be continuously and cooperatively revised if new items are to be identified, defined, classified, and presented in basic form; such a revision is essential if progress is to continue. It must be clear that handbooks must be developed to cover areas of education where record items are not standardized. It must be clear that handbooks of standardized items and terms in the traditional areas, important as they are, are not the limit of service to the improvement of educational records.

There is need for a classification of all items in a comprehensive system of educational information for use in establishing a total system of educational records in all school systems. This need is supported by the current trends in the purpose of and practice in keeping records.

The development of a total system of educational records—one which makes items tell all they are capable of telling—calls for diligent efforts and careful study. A major system of classification is necessary to its success. Such a system is too important to education to leave to trial and error; it should be developed in a cooperative project similar to that which has produced the national handbooks.

For the present, both time and reflection must bring the full realization that educational records and their maintenance are much different from what they were only two decades ago. The major change is in their purpose: to aid in decisionmaking. They are a function in the educational process, not alone a reflection. In their sensitivity to that which can or should be done, they are a function, active, contrasting with a passive role which represents only that which has been. In this is the essence of their purpose, their reason for being, the part they have in making a difference in education.

Quality Secondary Schools of the Future

OVID F. PARODY

Much of today's ferment in education grows out of the interaction of former and current theories of what makes a quality program. Many persons who are aware of the ferment have no clearly defined ideas of these theories and the social forces behind them. In an effort to sharpen and clarify the issues and problems growing out of the interaction, Dr. Parody, in a two-part article, traces the development of the dominant trends now current in secondary education and compares them with former trends.

He describes the urgent need for university scholars and schoolmen to engage in an educational dialogue which will enlarge areas of understanding and provide an acceptable basis for cooperative planning in education. He points out the necessity for schoolmen as educational practitioners to act on the basis of defensible assumptions and tentative formulations of quality education. Part I of his article appears below; part II will appear in the December issue.

CURRENT SOCIAL DEVELOPMENTS have stimulated several educational movements. For example, the increase in knowledge produced by research, the advances in technology, and the growth of urbanization have triggered educational reactions at all levels, but particularly in secondary schools. These current educational movements have taken the form of a dominant emphasis on academic excellence, significant emphasis on efficiency and economy in administration, and special programs for disadvantaged youth. If we are to adjust to the contemporary educational scene, we need to examine each of these movements and the social forces behind them in detail.

The cooperative efforts of the Government, industry, the military, and universities which produced the atomic bomb may have even greater significance than the development of the bomb itself. These efforts showed man the way to produce new knowledge: for the first time in the history of mankind a society mobilized its major institutions into a corporate effort with unlimited financial support to create new knowledge. And it worked.

In the years since the war this corporate effort has continued and has been accelerated by the space race. As it has developed, many persons, particularly members of the professions, have come to realize the importance of the elementary and secondary schools in the production of new knowledge. Their realization has led to new movement that is shaping and reshaping American education, from kindergarten to the university; university scholars, particularly in mathematics and science, are its leaders. Let us examine some of their basic theories.

1. Learning is conceived of as a process of inquiry and discovery within the various intellectual disciplines. Holders of the theory maintain that each intellectual discipline has a basic structure, that a pupil learns to fit facts together in the structure of the discipline he is studying. If he understands the basic structure of the discipline, he can fit new facts into a context which makes sense to him. For instance, a pupil studying economics can make sense out of a discussion of a particular topic such as unemployment if he can see its relationship to the supply and demand of labor or to goods and services; in other words, if he has a basic framework of knowledge of the economic process. In economics this framework would be a knowledge of the interrelationships among resources, technology, and institutions.

2. Men are acquiring new knowledge so rapidly that it is impossible for a single specialist to know the "content" of a discipline. Therefore the former objective of having pupils "cover the ground" in subject matter has been abandoned in favor of helping them discover the structure of a discipline, that is, to understand the interrelationships of its basic ideas.

3. Since each discipline has its own structure, no one instructional method can be successfully used in all subjects. Pupils are therefore taught to think as physicists, biologists, chemists, historians, or economists, as the case may be.

4. Pupils learn to understand intellectual conceptions through a circular process. This means that basic ideas should be introduced at a much earlier age than has been heretofore customary. Even children in the primary grades are capable of understanding many difficult ideas which are graded to their level of maturity. As Bruner says, "any idea can be represented honestly and usefully in the thought forms of children of school age * * *

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any subject can be taught to any child in some honest form." [1]

5. More vigorous intellectual content is both possible and desirable in the curriculum of elementary and secondary schools. If students in colleges and universities are to develop the competencies this Nation needs, a tougher academic curriculum must be required from the kindergarten to the university.

6. The exceptionally bright and the talented should be given special consideration. The development of their talent should no longer be left to chance. If the talented are to be fully challenged they must be identified early, and given special programs, more and better materials, and better trained teachers.

THE MULTIPHASED SEARCH for ways of developing academic excellence is the dominant trend in American education today. It provides the backdrop against which all developments are viewed. It gives direction, provides the atmosphere, and sets the tone for the entire educational enterprise. It influences two other movements, less dominant but still significant: they are the demand for efficiency and economy, and for equality of educational opportunity for deprived pupils.

The atmosphere of urgency in education has led to an electronics revolution in the classroom. And at the same time mounting costs and increasing competition for the tax dollar have spurred the search for economy in educational administration. These two movements have led to the use of the computer in administration, new media in the classroom, and more efficient use of staff.

Educators have just begun to use the computer, but some of them believe that its application is limited only by man's imagination and creativity. At present it is used more widely in the administrative phases of scheduling, recordkeeping, and the like, but its greatest promise lies in its creative use in the curriculum. As curriculum workers develop more understanding of the computer's instructional possibilities and computer experts develop more understanding of the curriculum, we can expect some highly productive results in automated learning.

The Systems Approach in education, which is a coordinated use of texts, audiovisual materials, and other teaching aids, has perhaps reached its most sophisticated development in the teaching of modern languages. Modern language teachers can now obtain basic texts based on the latest findings of linguistic research and a variety of teaching aids. Teachers of foreign languages can utilize multimedia kits which contain films, video tapes, lesson plans, record albums, programed tapes, transparencies for overhead projectors, directed exercises in developing skills, and other devices.

A nationwide effort, stimulated by the National Association of Secondary School Principals and led by Lloyd Trump, stresses more effective utilization of educational resources. This effort has focused on changing school practices to secure more effective use of the following resources:

- —time through flexible modular scheduling
- —space through the use of movable partitions and new structural designs
- —personnel through cooperative planning and team teaching
- —curriculum planning through the use of large groups, small groups, and individual study
- —salary schedules and staffing patterns; for example, by using master teachers, assistant teachers, interns, lay assistants, and the like
- —individualized instruction in nongraded programs, which enable each student to advance at his own rate.

THE SECOND of these two movements is working to provide special programs for pupils who for one reason or another are culturally and educationally deprived.

The growth of urbanization has intensified our educational problems. As a result a great backlog of unsolved problems related to young people has already built up in our big cities. Thousands of boys and girls from minority cultures are educationally disadvantaged in our big cities, and their problems continue to mount at an alarming rate. This situation produces most of our dropouts, functional illiterates, the unemployed, and delinquent youth.

The severity of these problems has increased the pressures on the schools to do something about them. What kinds of educational programs are needed for the culturally disadvantaged? How can they be motivated to learn? How can their blocks to learning, particularly in the communication skills, be removed? Schools are searching for the answers. Schools in some large cities are making pioneering efforts; many of them are using the Higher Horizons Project of New York City as a model. These and other schools and other agencies will get some help from recent Federal legislation, particularly the new Vocational Education Act and the Economic Opportunity Act.

THE SEARCH for greater efficiency and economy is closely related to and compatible with the emphasis on academic excellence. Many believe that both the new media and the new organizational patterns can facilitate pupils' learning of academic subjects.

Special programs for disadvantaged students do differ from the academic pattern. Many educators think, however, that this deviation is only a temporary necessity. They believe that the learning potential of the disadvantaged will be released as soon as the effects of cultural and economic deprivation are overcome and that these special programs will return to the academic main line.

Efforts to overcome the effects of deprivation on pupils will very likely become more successful as experimentation proceeds. Some promising practices are already appearing however; for example, in nursery school programs, parent counseling sessions, programs aimed at raising the levels

[1] Jerome S. Bruner, *The Process of Education*. Cambridge, Mass., Harvard University Press, 1961.

of pupils' aspirations, slum clearance projects, and vocational education and retraining programs.

Newer educational techniques will facilitate the teaching of academic subjects to the disadvantaged. For instance, programed learning (a technique or variety of techniques for using self-instructional devices in which a sequence of material is presented to a pupil one unit at a time as he is able to handle it) and team teaching within a nongraded organization will permit each pupil to progress at his own rate. This means that the deprived pupil will no longer have to compete with the more talented. These efforts will not come too soon for many young people, for the changing pattern of manpower needs will continue to increase the demand for intellectual training and lessen the demand for specific vocational skills.

Many persons are convinced that a sound basic educational program for all will best serve both the college-bound and the vocationally oriented pupils in our secondary schools.

If then we adopt this contemporary analysis of education and accept this line of reasoning, what direction is indicated for our secondary schools to take? What would the quality secondary school of the future be like? Let me suggest a few of the answers.

1. Leadership would come principally from university scholars working in the intellectual disciplines and supported by public and private foundations.

2. The central purpose of the school would be the intellectual development of its pupils.

3. Teachers would be competent scholars in an intellectual discipline with *particular* training in its processes of inquiry.

4. The curriculum would consist of the intellectual disciplines with special emphasis on their structures.

5. Teachers would use the inquiry method effectively within each discipline so that pupils would learn to think as mathematicians, physicists, or economists do.

6. New developments in media, school organization, and classroom techniques would make it possible for teachers to individualize instruction so that all pupils could learn academic subject matter successfully at their own pace.

These contemporary movements suggest that the quality school of the future will have its philosophical foundation in logical positivism, with stress on language analysis and a system of logic based on mathematics; on realism, with stress on man's need to adapt himself to physical reality and his need to learn to control reality through discovery of natural laws; and on eclectic selections from psychology.

Does this description provide guidance for the development of secondary schools of the future? Perhaps it is myopic and perhaps we might suspend judgment until we have viewed the present within a larger historical perspective.

WE CAN GET such a perspective by looking at earlier educational movements which were stimulated by earlier social developments. During the 1930's and 1940's, for example, the depression, the rise of totalitarianism, and World War II stimulated three influential movements. They were the Progressive Education Movement, the Community School Movement, and the Life Adjustment Movement.

The Progressive Education Movement was an effort to develop an indigenous American educational system to suit the needs of an industrial society. The movement gained impetus from the 8-year study of the Commission on the Relation of School and College, which was established in 1932 under the auspices of the Progressive Education Association.

The Commission sought to liberalize college entrance requirements because it believed that they were retarding the growth of secondary education by confining it to theories and ideas which were no longer suited to an industrial democratic society. To test its belief, the Commission asked 30 schools of various sizes and types and representative of different geographical sections to spend 3 years in improving their curriculums and a number of colleges and universities to accept the graduates of these schools without regard to college entrance requirements for 5 years.

The college records of the pupils from the 30 schools in this experiment were compared with those of a control group of students selected on a matching basis from conventional programs to determine which group was most "successful" in college.

What was the outcome? This is what the Evaluation Committee had to say:

When this Study was begun, it was a common assumption that the pattern of college-entrance requirements furnished, on the whole, a reliable clue to the proper education of all young Americans; in the case of the one out of six who actually went on to college these requirements were an inescapable mandate. Today the Eight-Year Study, with its painstaking followup of students in college, has shown that there is no sacred pattern—that success in college does not depend upon a particular quantity of experience in a predetermined sequence of studies.[2]

If then conventional subject matter preparation was not the basis for success in college—what was? Perhaps a review of some of the salient factors in the 8-year study might be suggestive:

1. The principal of the building and his staff functioning as an autonomous building unit were considered as responsible for educational planning.

2. Teaching was thought of as a team activity rather than an independent activity. Through cooperative planning, teachers formulated schoolwide goals. This common focus tended to break down rigid departmentalization.

3. The school curriculum was designed as a whole and usually included general education, which emphasized the knowledge and skills necessary to all boys and girls, and special education, which emphasized the special needs and interests of individual pupils.

4. The general education phase was organized in many schools on an interdisciplinary basis within either a broad field or a core curriculum. Units of work dealing with personal and social problems were planned within these patterns.

5. The basic ideas and values which guided the enterprise were drawn from the fields of psychology, sociology, and our democratic social philosophy. Some points of special emphasis were:

—respect for individuals, acceptance

[2] H. H. Giles, S. P. McCutchen, and A. N. Zechiel, *Exploring the Curriculum*. New York, Harper and Bros., 1942.

of and provision for individual differences.

—relation of curricular experiences to the developmental tasks.

—theory of learning based on organismic psychology with special reference to the interaction of the pupil and his environment.

—the method of science used as the method of intelligence in solving social problems (in its unsophisticated form, the method of intelligence is known as common sense. Its advocates hold that through inquiry man learns to satisfy his needs from the resources of his environment, that need motivates man to explore, search, study, and act. In its more sophisticated form it is known as the scientific method.)

—democratic administration which encouraged widespread participation in planning.

6. The inservice growth of the participating teachers was crucial to the success of the 8-year study. In the beginning many had thought that the teachers would be a major stumbling block because of their characteristic resistance to change. The teachers, however, apparently looked upon their participation as a creative adventure.

The evaluators of the study concluded that the inservice growth of teachers could be attributed largely to the following factors:

(1) release of college restrictions and challenge to put new thinking into effect;
(2) cooperative formulation of broad purposes;
(3) provision of time and occasion for constant conferences, planning, and accumulation of new materials;
(4) application of scientific methods to the problem of evaluation;
(5) stimulus of visiting consultants and news of the progress of the project as a whole.[3]

The Community School Movement, or the Sloan Foundation Experiment in Applied Economics, was an attempt to relate the school curriculum to social betterment. The experiment originated in the spring of 1939, when Harold Clark of Columbia University asked officials of the foundation this question: "What would happen if the schools throughout the country—particularly those located in low-income areas—really tried to improve the level of living in the communities they serve?" "Let's find out," he said.

Learn and Live [4] reports the foundation's answer: "We did. We visited some of the poverty-stricken regions in eastern Kentucky; we traveled the never-ending sand trails of northwestern Florida, and then, by way of contrast, we betook ourselves to the icy roads of Vermont. We visited rural schools—scores of them—and observed this one common fact in just about all of them: lessons wholly unrelated to the life and conditions of the community."

The Sloan Foundation next sought the cooperation of State universities in Kentucky, Florida, and Vermont. These institutions agreed to conduct an experiment designed to discover whether school instruction could be used as a means of raising the level of living in the community. These programs were designed to deal with the basic essentials of living, concentrating on food in Kentucky, housing in Florida, and clothing in Vermont.

The experiment was phased out after about 6 years because foundation officials had obtained conclusive answers to their basic questions. They were convinced that a school could design its program to promote the economic well-being of a community and at the same time do as well as the conventional school in teaching basic skills and knowledge.

The Life Adjustment Movement was an attempt to design a curriculum that would meet the educational needs and interests of young people who were not bound for college and who were dropping out of school at the age of 16, the legal age for leaving school.

Secondary schools which had formerly tried to raise their standards of selection began trying to increase their holding power as school dropouts were becoming a social problem. Thus, during the 1930's and 1940's the secondary schools became typical cross-sections of their communities. A new and more comprehensive school program was needed. The problem of designing a program was given greater urgency by the ever-increasing number of school dropouts and an anticipated postwar depression. No action program was developed, however, until the Life Adjustment Movement was initiated.

The idea of the movement originated in an Office of Education conference (May 31–June 1, 1945) called to consider the problem. At its close the conference adopted a resolution calling for a practical program for boys and girls of high school age for whom neither college preparatory nor vocational training programs for skilled occupations are suitable.

Charles Prosser, who introduced the resolution, said that the practical problems of providing a suitable educational program for this group were so great and the schools have had so little experience in it that leaders in all aspects of secondary education should cooperate in solving it.[5]

In the next 2 years leaders in education, individually and in regional and national conferences, considered the resolution. In 1947, at the recommendation of a national conference, the U.S. Commissioner of Education appointed a national commission on life adjustment education to stimulate the improvement of life adjustment education in secondary schools. During the next few years there were indications of success.

The need for comprehensive educational planning lost its social visibility during the Korean War, but it continued as an internal school problem. Schools struggled with the problem of developing a program of universal secondary education. Some experimented with basic reorganizations using various designs of general and special education; others dealt with it expeditiously through watered-down academic subjects, social promotion, or other superficial devices.

THE THREE MOVEMENTS were compatible, as they were internally and externally consistent with each other. The Sloan Experiment in

[3] Ibid.

[4] Clara M. Olson and Norman D. Fletcher, New York City, the Alfred P. Sloan Foundation, Inc., 1946.

[5] A Primer of Life Adjustment Education for Youth, by J. Dan Hull, American Technical Society, 1949. Chicago, Ill.

Applied Economics and Life Adjustment Movement were extensions and applications of the basic educational concepts which guided the 8-year study. The Sloan experiment was an extension of experimentalism and organismic psychology to the field of social improvement, and the Life Adjustment Movement was an extension of both to the problems of nonacademic students. From their experience in these movements leaders in education developed the following conceptions of quality:

1. Leadership should come from professors of education working with State departments, local school administrators, and supervisors.

2. The central purpose of the school is to facilitate the wholesome growth of adolescents through helping them deal intelligently with significant personal and social problems.

3. Some teachers should be educated as generalists, others as specialists. Generalists should have special preparation to acquire an understanding of adolescent growth and development with general preparation in broad interdisciplinary subject areas; specialists should have special preparation in a subject area with general preparation in adolescent growth and development.

4. The curriculum should be designed by the autonomous building principal and staff from principles drawn from the educational foundations of philosophy and the behavioral sciences.

5. In general, pupils should learn by applying the method of intelligence to the problems of personal and social living.

6. A teacher should provide for individual instruction by breaking down large problems into subproblems. He should have pupils use a variety of resources and take part in a variety of activities in solving the subproblems. In this way he would provide for different levels and styles of learning.

7. Educational theory should draw its basic concepts from the philosophy of experimentalism, field-theory psychology, and eclectic selections from the behavioral sciences.

What effect do these concepts have on our concept of the quality secondary school of the future as an academic institution for intellectual development? To answer this question, we need to make a comparative analysis of contemporary and former trends which should help us establish a direction for the future.

Blackwood—*Continued from page 15*

guides developed by the administrative unit rose with the size of the unit enrollment. More than 50 percent of the schools in the largest administrative unit group, at every grade level, used an administrative unit science guide *very often* in contrast to 10 percent in the *500 and under* administrative unit. About one-fourth of the schools used the guides *rarely or never* in the large school systems, compared to three-fourths of the smaller school systems. The largest schools also tended to use administrative unit guides far more than small schools. It is important to realize, however, that schools may have marked *rarely or never* because no guides were available.

Time given to teaching

Schools usually taught science two, three, or five periods a week. But what do these periods mean in terms of minutes, a better measure of the time given to science teaching? A small but significant percent of all schools taught science less than 20 minutes a week at almost every grade level, particularly the *49 and under* schools. In the lower grades only a small percent of schools taught science as much as 200 minutes a week (an average of 40 minutes a day), but in the fifth through eighth grades a substantial percent of schools taught it more than 200 minutes a week.

Equipment

The questionnaire listed 42 selected items used in science teaching, ranging from the simple and common to the expensive and unusual, and asked schools to report how many of each item were available for use in the school. The list was not all inclusive, nor was it presented as a model list since the equipment requirements of a school depend on its curriculum. It did, however, contain items which curriculum guides and elementary science books frequently mention.

For almost every item the mode number (that is, the number most frequently reported) was *zero*. In no instance was it greater than *one*. The schools in the *800 and over* group fared best. But even in this group, though many schools had enough equipment for a demonstration type program, they did not have enough for a program of individual investigation. The *50 to 399* and the *49 and under* schools reported an extreme dearth of items by actual count.

As to the availability of equipment, the difference among enrollment groups was most striking. The smaller the school, the less available and the less adequate the equipment and supplies. Over one-fourth (26 percent) of the *49 and under* schools compared to less than 1 percent of the *800 and over* schools, for example, reported that equipment and supplies were completely lacking. Eight percent of all schools said that equipment and supplies were *very plentiful;* 46 percent, *generally adequate;* and 46 percent, in the two categories, *far from adequate and completely lacking.*

Expenditure for science

The mean expenditure by school enrollment was from 44 cents to 60 cents a pupil. The mode number, however, indicates that the largest percent of schools spent from 11 to 14 cents per pupil. The *49 and under* schools spent as much per pupil as the larger schools, but the amount spent by these schools was inadequate to support good programs. The percentages of

all schools in each of several expenditure categories were these:

Amount spent per pupil:	*Percent of schools*
0–20 cents	40.1
21–40 cents	9.4
41–60 cents	11.7
61–80 cents	10.6
81 cents–$1	4.6
$1.01–$1.24	4.6
$1.25–$1.50	3.4
$1.51 and over	15.6

These figures do not show, however, that nearly 50 percent of the *49 and under* schools spent from 0 to 20 cents annually per pupil and that 21 percent spent over $1.51 annually per pupil. On the other hand, only 4.3 percent of the *800 and over schools* spent as little as 0 to 20 cents per pupil, and 9.2 percent spent $1.51 and over.

Science clubs

On the question of whether they thought science clubs desirable, 75 percent of all schools said yes. But to the question on whether they had science clubs, only 7 percent said yes. Generally, the larger the administrative unit, the higher the percent of schools with clubs: 20 percent of the *800 and over* schools had clubs, but only 5 percent of the *49 and under*.

Barriers to effective teaching

Of 13 items listed by the questionnaire as "barriers to effective science teaching," the schools indicated that "lack of consultive service" is the greatest barrier. There were differences of opinion, however, among the groups. "Inadequate room facilities" ranked first with the *800 and over* schools and the *400 to 799* schools, though it was third with the other two groups. The *49 and under* schools checked "lack of supplies," "lack of consultant help," "not enough money," and "not enough time for instruction" as the greatest barriers. See table 3.

Recommendation

The data obtained by this study seems to point to inadequacies in the science programs of some elementary schools. Many changes will be necessary before these schools can eliminate them. The findings of the study point to these recommendations:

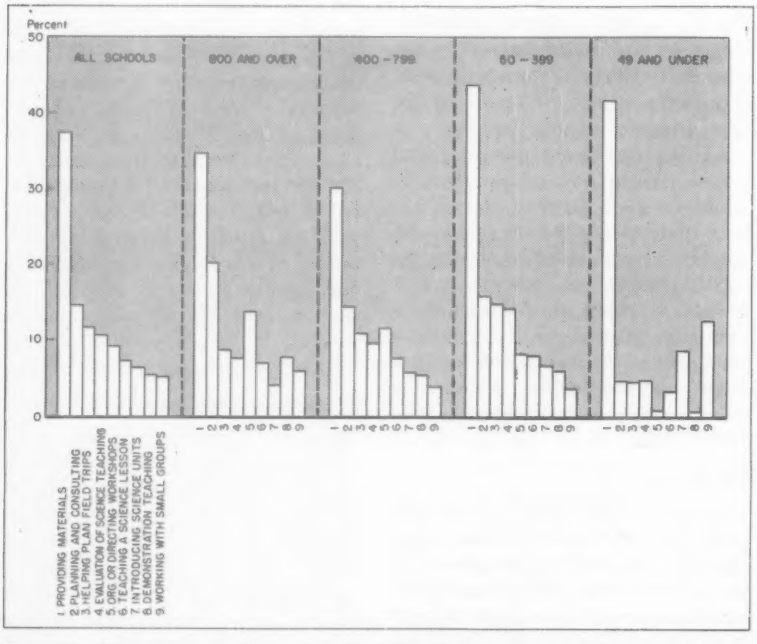

Figure 3.—Nine ways consultants are used in teaching science, ranked within school enrollment groups

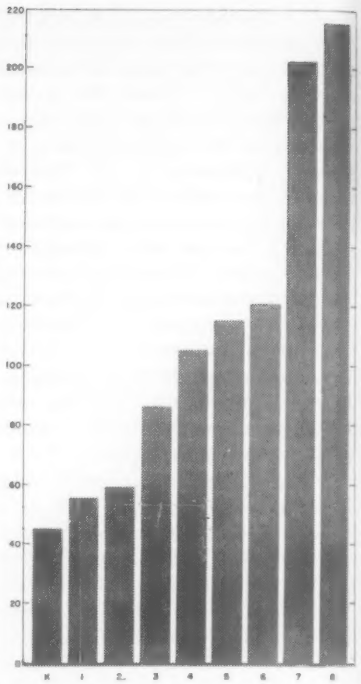

Figure 4.—The number of minutes a week given to science teaching in schools in the 400 to 700 group

- Schools should determine whether the time they give to science teaching is enough to provide sound and adequate instruction.
- Schools teaching science incidentally should reassess the advantages and disadvantages of this method in comparison with programs based on systematically planned curriculums.
- Schools with inadequate supplies should acquire more materials and equipment. Small schools and small administrative units, particularly, need to put more effort into obtaining and using science equipment and supplies.
- Schools need to develop and take part in inservice programs for teachers to help them update knowledge and acquire better methods.
- Schools need to identify additional consultant resources, particularly for the classroom teacher who most often teaches science in elementary schools.

AD Minutes Briefly noted--- for the busy School Administrator

Material for this department is prepared by the staff of the Division of Educational Organization and Administration

Three State departments of education—Michigan, Oregon, and Washington—have established internship programs for the training of researchers. All three States select their interns from among students and pay them pro rata to work part time for the State department while they continue their studies. In Michigan the interns, called "research and statistics training aides," work half time for the department on specified research projects; and in Washington, they are called "research interns" and work full time but for shorter periods on renewable contracts. In Oregon they are called "resident consultants" and receive academic credit for their experience. These internship programs in research are patterned generally after the administrative internship programs developed cooperatively by several leading universities and nearby local school districts.

"This is a new approach in the education spectrum," Governor Carl Sanders observed after swearing in the members of the Georgia Educational Improvement Council. The council, a State agency authorized by the General Assembly earlier this year, is charged with setting long-range policies and institutions of higher learning in Georgia.

"In the past," Governor Sanders said, "there has been little coordination between educational groups in the State. Far too often, the Board of Regents has gone one way and the Department of Education has gone another with no real effort to coordinate."

The council will give immediate attention to working out effective relationships between junior colleges and the area vocational schools, especially in eliminating duplicate efforts; and to better articulating requirements for high school graduation and college entrance.

Minnesota school districts spent approximately $700 million for construction of classrooms and related facilities between 1954–55 and 1963–64. This represents approximately 14 percent of the total cost of Minnesota's educational services during the 10-year period. Despite rising costs of materials, labor, and construction machinery, Minnesota was able to reduce construction costs. The average cost per square foot, based on all primary construction contracts of *new free standing* buildings, reported during this period was $14.88 in 1950–51; $14.80 in 1953–54; $14.30 in 1959–60; and $14.52 in 1962–63. Unit costs have been reduced by these means:

- Larger units and more units constructed at one time.
- Better educational and architectural planning.
- More capable and experienced contractors.
- Greater use of equipment and better designed equipment.
- More experienced and productive construction craftsmen.
- Changes in the buildings themselves such as the use of slab on grade without certain pipe tunnels, inside wall materials that cost less but may require more maintenance over the years, and lower ceiling heights.

Several architects who have compared the unit costs of public schools with college buildings, banks, churches, office buildings, and similar types of buildings report that, in Minnesota, only two types cost less—warehouses and supermarkets.

The Texas "Stay-in-School Proj-ect" approved by the State board of education for 1964 has been extended to August 31, 1965. The project provides eight consultants to work in five areas of South Texas with local school authorities to determine the extent of school dropouts and the conditions in various communities which contribute to the problem. The consultants also work with local authorities in attempting to find solutions to the dropout problem. Areas being serviced at present include San Antonio, Edinburg and surrounding districts, Corpus Christi, Robstown, Mathis, Alice, and Victoria.

Both schoolmen and laymen know that they will not solve the problem of nonattendance merely by sending a truant officer after a chronic absentee or by punishing his parents by making them bring the boy back to school. They know, too, that pupils' absence from school may result from a complex interaction of factors; and acting on that knowledge, they are searching for more sophisticated means of keeping children in school. Among those means has been the increasing use of pupil personnel services—counseling, psychological services, and visiting teacher services—to discover the reasons for pupils not attending and where possible to prevent attendance problems from developing.

Louisiana, for example, which for 20 years has had provisions for visiting teachers in its compulsory attendance laws, last year amended its laws to put increased emphasis on the activities of the visiting teacher. The version of the law adopted by the legislature was recommended by the Louisiana Visiting Teachers Associa-

tion, which studied the compulsory attendance laws of all 50 States before making its recommendations.

Among the provisions of the law are the following:

1. That the State director of child welfare and attendance and the assistant director, appointed by the State superintendent of education, shall meet the certification standards for visiting teache..

2. That the school board of each city and parish (county) shall employ at least one certified visiting teacher.

3. That visiting teachers shall spend full time at duties directly related to their office. (Formerly, school boards could assign additional duties to the visiting teachers.)

4. That before a school suspends a pupil, the visiting teacher, parent, and school superintendent shall be notified in writing of a proposed suspension, including the reasons for it and the terms.

5. That before a pupil is referred to a juvenile court as habitually tardy or habitually absent, the principal shall file a report with the visiting teacher indicating what efforts were made, including contacting the pupil's home, to correct the condition.

SCHOOL BONDS

. . . sales, interest rates, et cetera . . .

FOR THE PUBLIC SCHOOLS

By ELMER C. DEERING, *specialist on the financing of school facilities, Division of Educational Organization and Administration, Office of Education.*

INTEREST RATES on school bonds in the 1963–64 school year averaged 18 basis points higher than in 1962–63. The upward swing began in September 1963 and reached a high of 3.32 percent in March 1964. Between September 1963 and September 1964, monthly averages on all rated bonds moved within a narrow range of only 16 basis points, in contrast with 66 points in the 1961–62 school year and 32 points in 1962–63. Bonds with a rating of "A" showed the narrowest range with a low monthly average of 3.13 percent and a high of 3.29 percent. The widest range in monthly averages was 33 basis points for bonds with a "Aa" rating.

The narrowness of the range of interest-rate averages during the past year becomes more apparent when quarterly averages are examined. The range has been between 3.21 percent in the October–December quarter of 1963 and 3.25 percent in the July–September quarter of 1964, a spread of only 4 basis points. The September 1964 interest cost on bonds with a "Baa" rating and on all rated bonds was distorted by one sale of $15 million at a rate of 40 points above the average for the other 20 sales of the same rating. Except for this sale, the average for "Baa" bonds would have been 3.44 percent instead of 3.63 percent and for all bonds 3.25 instead of 3.31 percent.

Average net interest cost of Moody-rated bonds sold on primary market for public schools, by rating and by term of bond, for the latest quarter and month available

Term of bond	Aaa	Aa	A	Baa	Ba	All rated bonds
	Latest quarter (July–September 1964)					
Under 15 years	2.73	2.75	3.02	3.25	3.67	2.94
15–24 years	.....	3.03	3.16	3.59	.....	3.28
25 years and over	.....	3.22	3.22	3.49	3.84	3.28
All terms	2.73	3.13	3.17	3.54	3.79	3.25
	Latest month (September 1964)					
Under 15 years	.....	2.66	2.98	3.45	3.67	2.89
15–24 years	.....	3.08	3.18	3.70	.....	3.35
25 years and over	.....	.....	3.30	3.48	.....	3.39
All terms	.....	2.98	3.19	3.63	3.67	3.31

Source: Sales reported by *The Daily Bond Buyer;* ratings reported by Moody's Investors Service (rated bonds include from 75 to 80 percent of all bonds for public school purposes.)

Average net interest cost of Moody-rated bonds sold on primary market for public schools, by rating only: Annual 1959–60 to 1963–64; monthly, September 1963 to September 1964

Period	Aaa	Aa	A	Baa	Ba	All rated bonds
1959–60	3.26	3.63	3.77	4.21	4.55	3.84
1960–61	2.82	3.34	3.43	3.75	3.97	3.48
1961–62	2.84	3.23	3.19	3.51	3.93	3.27
1962–63	2.64	2.86	2.99	3.29	3.72	3.03
1963–64	2.88	3.07	3.17	3.43	3.80	3.21
1963						
September	.....	2.96	3.13	3.33	3.76	3.19
October	2.76	3.05	3.18	3.38	3.73	3.18
November	2.89	3.14	3.25	3.46	.....	3.25
December	2.86	3.04	3.18	3.50	3.80	3.23
1964						
January	.....	3.05	3.21	3.46	3.81	3.25
February	2.85	2.87	3.13	3.39	3.83	3.16
March	3.00	3.08	3.29	3.47	3.88	3.32
April	.....	3.09	3.20	3.49	3.81	3.24
May	2.83	3.16	3.13	3.47	3.73	3.22
June	2.94	3.14	3.19	3.50	3.86	3.24
July	2.77	3.20	3.18	3.49	.....	3.25
August	2.70	2.96	3.16	3.49	3.84	3.22
September	.....	2.98	3.19	3.63	3.67	3.31

Source: Sales reported by *The Daily Bond Buyer;* ratings reported by Moody's Investors Service (rated bonds include from 75 to 80 percent of all bonds for public schools).

FOR COLLEGES AND UNIVERSITIES

By PAUL K. NANCE, *acting chief, Higher Education Business Administration Section, Office of Education, and Elmer C. Deering.*

DURING AUGUST bond sales for colleges and universities totaled $59.8 million, which was slightly more than one-third of the July total of $170.6 million. Of the August total, publicly controlled institutions sold $46.6 million and privately controlled institutions sold $13.2 million. Only 3 of the sales (all by public institutions) were made to finance the construction of instructional facilities; the remaining 27 sales were to finance construction of residential or a combination of residential and auxiliary facilities.

The average interest rate on all sales was 3.39 percent. The average rate on public sales was 3.36 percent, with ranges during the month from 3.09 to 3.78 percent; rates on private sales averaged 3.48 percent, with ranges from 3.38 to 3.63 percent.

Bonds sold for higher education, August 1964: Number and amount of sales and average net interest cost, by type of institutional control, type of financing, type of bond, and type of facility to be constructed

Type of financing, bond, and facility	Number of sales	Amount (000)	Percent of total	Average net interest cost (percent)
PUBLIC INSTITUTIONS	20	$46,648	100.0	3.36
Type of financing:				
HHFA	9	8,635	18.5	3.51
Other	11	38,013	81.5	3.33
Type of bond:				
Revenue	17	35,848	76.8	3.42
General obligation	3	10,800	23.2	3.16
Type of facility:				
Academic (instructional)	3	10,800	23.2	3.16
Auxiliary				
Residential	15	34,268	73.4	3.43
Residential-dining	2	1,580	3.4	3.35
PRIVATE INSTITUTIONS	10	13,188	100.0	3.48
Type of financing:				
HHFA	10	13,188	100.0	3.48
Type of bond: Revenue	10	13,188	100.0	3.48
Type of facility:				
Auxiliary				
Residential	7	7,807	59.2	3.51
Residential-dining	2	4,300	32.6	3.46
Residential-st-ctr	1	1,081	8.2	3.38
ALL INSTITUTIONS	30	59,836	100.0	3.39
Type of financing:				
HHFA	19	21,823	36.5	3.49
Other	11	38,013	63.5	3.33
Type of bond:				
Revenue	27	49,036	82.0	3.44
General, obligation	3	10,800	18.0	3.16
Type of facility:				
Academic (instructional)	3	10,800	18.1	3.16
Auxiliary:				
Residential	22	42,075	70.3	3.44
Residential-dining	4	5,880	9.8	3.43
Residential-st. ctr	1	1,081	1.8	3.38

Bond sales for publicly controlled and privately controlled institutions of higher education in the United States, by institution, August 1964

Institution	Amount sold (000)	Term	Average net interest (percent)	Use of funds [1]
PUBLIC	$46,648	.....	3.36	
Maricopa Co. (Ariz.) J. C. Dist.	4,800	1–25	3.21	Instr.
Univ. of Florida	1,786	1–40	3.50-H	Res.-apts.
Georgia Univ. System Bldg. Auth	23,000	1–30	3.36	Res.
Louisiana State Univ.	132	1–14	3.45	Res.
	968	15–39	3.50-H	Res.
	282	3–20	3.55	Res.
	618	21–40	3.63-H	Res.
Northeast Louisiana State Coll	1,800	1–40	3.78	Res.
Macomb Co. Comm. Coll. Dist. (Mich.)	4,500	1–15	3.09	Instr.
Kent State Univ	1,120	1–23	3.43	Res.
	1,380	24–38	3.50-H	Res.
Univ. of Tennessee	104	2–9	3.37	Res.
	395	10–39	3.50-H	Res.
Corpus Christi J. C. Dist. (Tex.)	1,500	1–18	3.20	Instr.
Texas Southern Univ	1,050	1–49	3.50-H	Res.
Texas Technological Coll.	260	3–19	3.58	Res.
	1,113	20–49	3.63-H	Res.
Wharton Co. J. C.	260	1–39	3.50-H	Res.
Univ. of Vermont	515	1–14	3.30	Res.-din.
	1,065	15–38	3.38-H	Res.-din.
PRIVATE	13,188	.....	3.48	
Tuskegee Institute	3,000	1–38	3.38-H	Res.
Marymount Coll. (Fla.)	1,168	1–40	3.63-H	Res.
American International Coll	420	1–29	3.50-H	Res.
Coll. of Our Lady of the Elms	1,580	1–38	3.38-H	Res.-din.
Avila College	1,081	1–39	3.38-H	Res. ctr.
St. John Coll. of Cleveland	1,700	1–49	3.63-H	Res.
Lewis and Clark Coll	2,720	1–49	3.50-H	Res.-din.
Warner Pacific Coll	311	1–49	3.50-H	Res.
Mount Aloysius J. C.	695	1–49	3.63-H	Res.
Bridgewater Coll	513	1–49	3.50-H	Res.

[1] Abbreviations in this column indicate the following uses: Instr., instructional; Ctr., student center; Din., dining; Res., residential.
H. Purchased by Community Facilities Administration, HHFA.

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